

Hospital For Special Surgery Annual Report 1968





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Recreation department provides diversionary activity for patients of all ages.

Many important administrative and medical decisions affecting the life of the Hospital are made in the board room.



Message from the President

Although the Hospital building is only fourteen years old, we are suffering from a very serious lack of space. The number of operations has more than doubled in twelve years. Many of the operating procedures today have been developed in that interval and require much more time to perform. The operating room situation was relieved to some extent five years ago when we added another shift to permit all day use of the operating room suite, increased use from five to six days and increased the number of residents from fourteen to twenty-four. Even so, the situation is extremely unsatisfactory. The load on the X-ray facilities and the clinical laboratories has also more than doubled.

Apart from an over crowded Hospital, we faced a serious problem of providing low-cost housing for medical and nursing personnel. Accordingly, we have recently acquired an apartment house with sixty-eight apartments. This is in addition to thirty-eight apartments that we have owned for some years. Inasmuch as we are faced with the prospect of losing space in New York Hospital's Payson House it seems clear that we should acquire thirty to fifty more apartments and this will be done as part of a joint effort now being made by Memorial Sloan-Kettering Cancer Center, New York Hospital – Cornell Medical Center and ourselves to acquire real estate in the neighborhood. At the present time, we are actively considering the purchase of housing units containing 484 apartments and twenty-five servants' rooms. The Hospital's share of the equity required is expected to be between \$900,000 and \$1,000,000.

At present we have three full-size operating rooms and a smaller room suitable for hand or foot surgery. It is planned to have five full-size rooms, each with anesthesia induction and separate scrubbing facilities, preparation and preinduction space, much improved airconditioning, and a recovery

room of ten beds. Provision will be made for a dark room, large storage areas, special rooms for splints and plasters, space for instrument sterilization, an office and space for anesthesiology, dressing and locker rooms and a staff lounge.

The clinical laboratories must be doubled in size and made more efficient to keep up with the much greater use of laboratory tests and with the increased load resulting from many more operations. Laboratory tests jumped from 46,000 in 1956 to more than 100,000 in 1968. Two additional laboratory services are contemplated; (1) A "broad spectrum" serology laboratory for the rheumatic disease patients; and (2) an automated chemistry laboratory for the study of electrolytes, etc. Six-day use of the operating rooms has already necessitated a 45% increase in laboratory personnel.

We maintain a school for Practical Nurses which has graduated more than 600 women and has helped us to greatly improve our nursing staff over the years. As an experiment, we have picked outstanding graduates during the last two years and provided them with \$5,000 over two years to enroll in the two-year Hospital diploma school program or the two-year Associate Degree program in a community college. These women will qualify to take the licensing examination for Registered Nurses and we feel that the combination of the one-year Practical Nurse course combined with the two-year course will make them excellent bedside nurses. Many people feel that this may be a new way to augment the supply of Registered Nurses primarily interested in patient care. We hope to raise funds, probably in the area of \$500,000, to endow this program.

Leaving aside the cost of additional housing and the program for training nurses, following is a table of immediate needs:

NEW CONSTRUCTION

Sixth and seventh floors on existing Caspary Research Building for clinical laboratories construction and equipment	\$1,050,000
Emergency generator	650,000
Ninth and tenth floors and penthouse apartments on hospital building including 28 rooms and bathrooms, raising elevators, etc.	\$2,975,000

AIR CONDITIONING	1,410,000
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RECONSTRUCTION

Operating room suite to consist of five rooms and ancillary facilities occupying entire fourth floor	990,000
Kitchen expansion	610,000
Doctors' offices, third floor	80,000
Enlargement of dining facilities	75,000
Incidental moves and alterations	<u>700,000</u>

TOTAL IMMEDIATE GOAL	<u>\$8,540,000</u>
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We have already raised approximately \$2,700,000 from the Hospital "family" and a few individual donors and foundations and at the present time we are engaged in widening the appeal.

The Board has been greatly strengthened during the past year by the election of

Mrs. Donald G. Dammond, Personnel Counselor with B. Altman & Company and a member of the national and local boards of the Y.W.C.A.; Richard M. Furlaud, President and Chief Executive Officer of Squibb-Beechnut, Inc; Mrs. Arthur A. Houghton, Trustee of Converse College, Institute of International Education and Parsons School of Design; Lawrence W. Lowman, retired Vice President of Columbia Broadcasting System and member of the Executive Board of the national Audubon Society and of the Conservation Commission of Connecticut; and Guichard Parris, retired Director of Public Relations and now consultant of the National Urban League.

I would like to express my deep appreciation to everybody connected with the Hospital, from Board members to the humblest worker, whose combined efforts make it the outstanding institution that it is and are responsible for its friendly and efficient atmosphere.

Philip Bastedo, President

Keeping a patient happy is part of the treatment.





Report of the Surgeon-in-Chief

I am glad to report that one of the encouraging events during 1968 was the participation of many of the members of our Attending Staff in groups studying, discussing and making suggestions concerning the future of The Hospital for Special Surgery, namely, building requirements, participation in community activities and fund raising.

Also, in the same light, we have assigned our Residents to various Committees of the Hospital, such as Infection, Utilization, Clinic, Operating Room, Nursing and Record, thereby having the knowledge of those who are on duty every day and at the same time letting the Residents know and see the many and diversified problems of running a hospital.

I have continued to invite various members of our Staff, when time allowed, to give a short presentation at each of the monthly meetings of the Board of Managers. In this way members of the Board are kept informed about the professional activities taking place in our institution.

We at The Hospital for Special Surgery like all academic institutions are eternally concerned with better patient care, progress in teaching and advancement in research.

Dr. Robert Lee Patterson, Jr., was appointed a member of the Board of Trustees of the Winifred Masterson Burke Foundation, and during the year Dr. Hugh Luckey, representing Cornell Medical Center; Dr. James A. Perkins, representing Cornell University; Mr. Frederick Trask, representing New York Hospital; Mr. John Guest, President of the Winifred Masterson Burke Foundation; Mr. Richard D. Vanderwarker, representing Memorial Hospital; and Dr. Robert Lee Patterson, Jr., representing Mr. Philip Bastedo and The Hospital for Special Surgery, signed a Memorandum of Understanding between the Winifred Masterson Burke Foundation and

the associated institutions of the Cornell Medical Center.

Dr. Patterson was appointed to the Medical Advisory Committee for Quality Physician Care of the New York State

The Joint Conference Committee of the Board of Managers consisting of the President of the Hospital, Mr. Marshall Rawle and Mr. S. Hazard Gillespie have met each month with the Surgeon-in-Chief, the Directors of Research and Rheumatic Diseases and the Administrative Vice President of the Hospital. In these meetings various subjects are discussed which pertain to the relationship of the Professional Staff to the Board of Managers. This has done a great deal to disseminate general knowledge about our Hospital.

During the year there was established a more intimate relationship between the doctors and the patients in the Out-Patient Department which has produced far better treatment and continuity of care of the patient. This has been under the able supervision of Dr. Lee Ramsay Straub, who is Director of the Out-Patient Department. Medical Assistance Program and served on the Clinical Science Faculty Council's subcommittee for determining the position of Cornell University Medical College students in relation to activities of the Cornell Medical Center.

Dr. William Cooper was named Chief of Medical Services of the United Cerebral Palsy Association of Nassau County, Inc., and Dr. Alfred Scherzer was named Medical Director. Dr. Cooper was also named Senior Consultant in Orthopaedics for the New York City Department of Health and Consultant in Orthopaedics of the American Bar Association.

Dr. Patterson, Dr. Lee Ramsay Straub, Dr. Philip D. Wilson, Jr., Dr. James A. Nicholas and Dr. Harlan C. Amstutz all participated in subcommittees of the



Senior resident explains case to other staff members as a part of hospital's teaching program.



Patient assists in teaching program.

American Academy of Orthopaedic Surgeons' Committee on National Health Program for Orthopaedics. The purpose of the Committee is to survey and report on the field of orthopaedic surgery in the United States to the Federal Government.

The Hospital for Special Surgery is participating in a new international, multi-center investigation of early synovectomy in rheumatic disease. This investigation was initiated at the International Conference of Synovectomy held in Amsterdam in April, 1967, and will be carried out in selected centers in various countries.

During the year the following received promotions, appointments and degrees: Dr. Philip D. Wilson, Jr., was promoted to Clinical Professor of Surgery (Orthopaedics),

at Cornell University Medical College; Dr. John H. Doherty was named Chief of the Combined Fracture Service of New York Hospital and The Hospital for Special Surgery; Dr. Rolla D. Campbell and Dr. Alexander Hersh were promoted to Attending Orthopaedic Surgeons and Dr. John L. Fox to Assistant Director, Department of Anesthesiology; Dr. James A. Nicholas to Attending Surgeon and Dr. Robert H. Freiburger to Associate Attending Radiologist at The New York Hospital; Dr. Klaus Mayer to Clinical Associate Professor of Medicine, Cornell University Medical College, and Associate Attending Physician, New York Hospital. Other appointments at The New York Hospital were Drs. John N. Insall, Eugene M. Lance and David B. Levine, promotions to Assistant Attending Surgeons and Dr. Konstantin P. Veliskakis, appointment as Surgeon to the Out-Patient Department.

Dr. Eugene M. Lance received his Ph.D. in Immunology from the University of London.

Having reached retirement age, Dr. T. Campbell Thompson and Dr. Peter-Cyrus Rizzo were appointed to the Consultant Staff. Other appointments were Dr. Jerome Lawrence to the Courtesy Staff; Dr. Peter Bullough as Associate Attending Pathologist

and Associate Scientist, Laboratory of Experimental Pathology, Research Department; Dr. Waltraud-Gisela Ryan as Assistant Attending Radiologist and Dr. Margaret O. Harrison as Assistant Radiologist; Dr. Robert A. Goldstone as Orthopaedic Surgeon to the Out-Patient Department.

In the Department of Rheumatic Diseases, Dr. Thomas T. Bowman was appointed Physician to the Out-Patient Department and Dr. Robert Winchester as Assistant Physician to the Out-Patient Department and Dr. Milton A. Wald reinstated as Physician to the Out-Patient Department.

In the Research Department Dr. Sten-Erik Olsson was appointed Consultant in Comparative Orthopaedics for the year 1969, and Patrick Cahill, Ph.D., as Consultant in Biophysics, Dr. Krzysztof Krawczynski as Visiting Scientist in Immunopathology, and Drs. Hakan Kasström and Italo Zanzi as Visiting Scientists. Temporary appointments in the Research Department included appointment of Drs. Bo Nilsson and Lars Lindberg as Visiting Scientists and Dr. Sven Albäck as Consultant to the Radionuclide Laboratory.

The following resigned from the Hospital and Research Staffs: Dr. Sten-Erik Olsson

Resident physician wins confidence of young patient.





Pediatric nurse is expert in care of infant patient.

as Associate Director of Research and Senior Scientist to return to Sweden and his Professorship of Clinical Radiology at the Royal Veterinary College in Stockholm; Dr. Paul D. Saville as Associate Attending Physician, Associate Director of Research and Senior Scientist to become Professor of Medicine, Creighton University School of Medicine and Director of their Arthritis and Metabolic Bone Disease Section; Dr. Paul J. Killoran as Assistant Director, Department of Roentgenology, to become Director, Department of Radiology, Knox County General Hospital, Rockland, Maine; and Dr. Ronald Match as Orthopaedic Surgeon of the Out-Patient Department to become Director of the Hand Service and Hand Clinic at Glen Cove Hospital in Long Island.

Others who resigned during the year were Dr. Edward Gendel from the Neuromuscular Diagnostic Service; Dr. Marion McIlveen from the Pediatric Service; Dr. Michael Lyons from the Department of Laboratories and Dr. Ernest Stern from the Anesthesiology Department.

Drs. Carl H. Dieterle, Robert A. Goldstone and O. Phil Miller completed their Orthopaedic Residency training during the year. Dr. William J. Bruton completed his Cerebral Palsy Fellowship; Dr. Hong Kun Lee and Dr. Louis Lurie completed Fellowships in Orthopaedic Surgery; Dr. David Nashel completed his Fellowship in Rheumatic Diseases as did Dr. Isaac Abadi who returned to Venezuela. Dr. Makoto Furuya completed his Fellowship in Orthopaedic Radiology and returned to Japan.

During the year the Hospital lost two members of its Staff who have given most generously of their time and skill over the years: Dr. Roland L. Maier, who for many years was a Consultant in Surgery, and Dr. Cornelius H. Traeger, who earlier this year resigned as Chief of Clinic Emeritus, Department of Rheumatic Diseases, and Consulting Physician, and had been associated with the Arthritis Clinics and In-Patient Service of this Hospital from their origin.

Patient statistics showed 35,174 clinic and private ambulatory visits were made in 1968. Hospital admissions totaled 3,199, which broke down into 2,087 private orthopaedic cases, 363 adult orthopaedic service cases, 374 childrens' orthopaedic service patients, 257 private rheumatic disease patients, 57 rheumatic disease service patients and 58 Comprehensive Arthritis Program cases. A total of 2,584 operations were performed during the year.

SPECIAL EVENTS

The Combined meeting of the American Academy of Orthopaedic Surgeons, the American Society for Surgery of the Hand and the Orthopaedic Research Society was held in Chicago in January. Two members of the Staff presented scientific exhibits, and six members of the Staff gave instructional courses at the Academy meeting, and three members of the Staff presented papers at

the Hand Surgery meeting. At the Orthopaedic Research Society meeting, two members of the Staff presented a paper, while a third participated in a symposium.

At the Annual Meeting of the American Orthopaedic Association, Dr. Lee Ramsay Straub delivered the Presidential Address, and Dr. Robert C. Mellors, elected an Honorary Member of the Association, delivered a paper as the President's Guest Lecturer. Dr. Göran C. H. Bauer and Dr. William Cooper gave papers at this meeting.

In April Messrs. M. A. R. Freeman, A. N. Henry, B. McKibbin, W. M. McQuillan, A. R. McKenzie, and B. J. Dooley, Traveling Fellows of the British Orthopaedic Association, visited the Hospital, and a special program of Surgeon-in-Chief's Rounds was arranged for them.

At the annual meeting of the American College of Surgeons, Dr. Preston A. Wade, former Chief of the Combined Fracture Service of New York Hospital and The Hospital for Special Surgery, was inaugurated as President, and Drs. David Levine, Ralph C. Marcove, Ronald Match and Richard Eaton of the Staff became Fellows of the American College of Surgeons as did several members of the Alumni.

Dr. Lee Ramsay Straub visited Australia in September as the official guest of the Australian Orthopaedic Association at its meeting in Melbourne.

The Hospital's annual Alumni Society Meeting held November 13th and 14th was one of the most successful ever held from the standpoints of program and attendance. Dr. Carroll B. Larson served as Surgeon-in-Chief Pro-Tempore and delivered the Philip D. Wilson Orthopaedic Lecture entitled: "When Arthroplasty". A Symposium on Ligamentous Instability of the

Knee was moderated by Dr. James A. Nicholas with Drs. Don H. O'Donoghue, Donald B. Slocum and Jack C. Hughston participating as panelists. The program also included scientific papers by members of the Staff and Alumni.

Visitors to the Hospital during the year included Dr. Anders Hulth, Director of Orthopaedic Surgery, Malmö General Hospital, Malmö, Sweden; Sir Peter Medawar, Director of the National Institute for Medical Research, London; Sir Harry Platt, Professor of Orthopaedic Surgery, Emeritus, University of Manchester, Manchester, England; Mr. John Charnley, Director of Hip Surgery, Centre for Hip Surgery, Wrightington Hospital, Wrightington, England; Mr. R. G. Burwell, Chief of Orthopaedics, Royal National Hospital, London; Dr. Oliver Cope, Professor of Surgery, Harvard Medical School, Boston; as well as orthopaedic surgeons from Argentina, Brazil, Colombia, Mexico, Paraguay, Venezuela, France, Scotland, England, Spain, Yugoslavia, South Africa, Singapore, Korea, Japan, New Zealand and Australia.

Director of pediatrics examines patient.



CLINICS AND SERVICES

Adult Amputee Clinic (Dr. Harlan C. Amstutz): The traditional Monday morning clinic was changed to Wednesday afternoon to enable the Social Service Department to interview patients prior to the meeting time, to facilitate taking X-rays, receiving and evaluating therapy and to improve punctuality. For the first time continuity of care is now provided by Social Service with the same worker following both the out-patient and in-patient.

The number of newly registered amputee patients who had never previously received a prosthesis diminished from 28 in 1967 to 15 in 1968. The number who had previously been fitted with a prosthesis was 22, but registration into the Clinic also decreased from the previous year. The decrease was a direct reflection of a newly organized Amputee Clinic at The New York Hospital with loss of referral and a diminishing number of amputee patients who are reported by all metropolitan clinics.

There were 278 revisits, and 14 operative procedures were performed including 8 amputations (2 below knee, 3 above knee, 1 below elbow, 2 transmetatarsal). The results of immediate post-operative fitting of prostheses in each instance was excellent, and the Staff now recommends this procedure as a routine.

Back Clinic (Dr. Peter J. Marchisello): The Back Clinic began in June, 1967, and since that time has completed 150 evaluations of clinic referrals with problems related to the back. The Clinic has recently been rescheduled so that its clinic day is combined with that of the Neuro-Orthopaedic Clinic and the Metabolic Bone Disease Screening Clinic, thereby expediting many of the interclinic referrals and rendering to each patient a more thorough and comprehensive examination. The team of physicians in the Back Clinic consists of one Attending, two Residents and two Fellows who will soon be joined by a Physio-therapist.

Birth Defects Consultation Clinic (Dr. William Cooper): This Clinic, established only three years ago, served an increasing number of referrals in 1968. Initially created to provide orthopaedic consultation to the Birth Defects Service of the Pediatric Division of The New York Hospital, it has attracted referrals from the General Orthopaedic Clinic and from a broad variety of outside agencies. Myelodysplasia remained the most frequent entity in the Clinic, but in addition there was an impressive variety of other skeletal and neurologic defects, some extremely unusual.

The Clinic met once weekly, and 258 examinations were provided during 1968. Forty-three patients were hospitalized for a total of 55 surgical procedures.

Cerebral Palsy Service (Dr. William Cooper): The Cerebral Palsy Service maintained essentially the same volume and character of services in 1968 as in 1967. Approximately 1,000 patients remained under active care with 89 new patients registered during the year. It is noteworthy that this basic complement of 1,000 patients and an annual increment of approximately 100 new patients has remained almost constant for more than ten years even though numerous new services for cerebral palsy have developed in New York City over this period.

The basic schedule of out-patient activities included as before two clinic sessions weekly plus one consultation clinic for private patients. In addition, one session monthly was conducted by Dr. Allan E. Inglis for specific upper extremity problems. These functions amounted to more than 1,200 medical examinations during the year.

Daily services other than medical examinations included psychologic testing, physical therapy, occupational therapy, speech therapy, social service interviews and brace services and comprised a total of almost 6,000 sessions.

During the year 64 patients were hospitalized for a total of 112 surgical procedures.

Outside of the Hospital, the Cerebral Palsy Service maintained a supervisory function in two other programs: The Cerebral Palsy Center of Nassau County which has a professional affiliation with The Hospital for Special Surgery and HC20 Classes at P.S. 199 which have been under the direction of the Cerebral Palsy Service of the Hospital for more than 20 years.

The Cerebral Palsy Center of Nassau County's Day Care Program has an active case load of 1,000 patients and is served by four members of our Staff as well as Residents, Fellows and Medical Students. HC20 Classes at P.S. 199 is a combined educational and medical program for 50 children of school age with severe orthopaedic handicaps including cerebral palsy, poliomyelitis, congenital anomalies, etc., most of whom are referred from The Hospital for Special Surgery.

Clubfoot Clinic (Dr. Alexander Hersh): The Clubfoot Service (Out-Patient and In-Patient) had a total of 1,149 clinic visits and 80 admissions of new clinic patients. Hospital admissions numbered 39 with 58 operations performed on these patients. In addition, 18 operations were performed on 10 private patients for a total of 76 operations, reflecting a continued increase in the number of surgical procedures. The Clubfoot In-Service continued to train Residents, giving them surgical experience in the handling of clubfoot problems and the opportunity to participate in several research projects.

Fracture Service (Dr. John H. Doherty):

Dr. Preston A. Wade, who founded the Combined Fracture Service of The New York Hospital — The Hospital for Special Surgery in June, 1955, and ably developed and directed it for 13 years, retired as Chief of this Service in June, 1968. During the period of Dr. Wade's fine leadership, 70 articles were published in a variety of journals. His dynamic teaching ability will be missed by everyone connected with the Fracture Service.

Dr. John H. Doherty, who has been associated with the Fracture Service since 1961, was named Chief in July and will be assisted by Drs. Paul A. Skudder, Robert L. Clarke and Howard Balensweig.

On the In-Patient Service 344 patients were operated on, and 3,530 patients were treated in the Fracture Clinic.

Two Residents from Special Surgery rotated through the Fracture Service every two months and participated in the weekly

Resident physicians examine clubfoot patient under guidance of attending physician.



Fracture Conference, X-ray Conference and Grand Rounds. In addition, the Fracture Service trained members of Cornell University Medical College's third year class in the diagnosis and treatment of trauma at three clinical sessions each week.

Hand Clinic (Dr. Lee Ramsay Straub): The Combined Hand Service of The Hospital for Special Surgery and The New York Hospital had an active year during 1968. More than 300 operations were performed, and there were 1,208 visits to the Out-Patient Clinic. Reconstruction of the hand deformed by rheumatoid arthritis and by congenital anomalies played a prominent part in this surgical experience. Thirty-seven patients had removal of tumors of the hand.

The Attending Surgeons participated in many conferences, both nationally and internationally, during the year. Work during the year led to the presentation of the following papers at the January, 1969, meeting of the American Society for Surgery of the Hand: "A Preliminary Report on Wrist Arthrography: Technique, Indications and Its Place in the Rheumatoid Arthritic Wrist," Drs. Chitranjan S. Ranawat, Robert H. Freiburger, Louis R. Jordan and Lee Ramsay Straub; "Carcinoma of the Nail Bed," Drs. James W. Smith and Allan E. Inglis; and "Surgical Correction of Thumb Deformities in Spastic Paralysis," Drs. Allan E. Inglis, William Cooper and William J. Bruton.

The Attending Surgeons on the Hand Service were Drs. John Dorsey, Rolla D. Campbell, Allan E. Inglis, James W. Smith and Richard G. Eaton, and the Fellows on this Service were Drs. William J. Bruton and Merrill A. Ritter. On the Program during the year from the Orthopaedic Surgery Service were Residents, Drs. Robert Diaz, Kuhrt Wieneke, Jr., John Marshall, Paul Lotke and

Louis Jordan, and Fellows, Drs. Louis Lurie and Tomihisa Koshino, as well as Drs. Robert Sengelmann and William Fisher from the Plastic Surgery Service of The New York Hospital.

Hemophilia Clinic (Dr. William D. Arnold):

The Hemophilia Clinic, which serves as a consultation and treatment facility for children with hemophilia and allied disorders complicated by disorders of the musculo-skeletal system due to recurrent bleeding, reported 125 patient visits and 50 consultations at The New York Hospital in 1968.

Miss Susan McKinley, registered physical therapist, worked with clinic patients and counselled their parents in developing an exercise program unique to children suffering from this disease who are usually unable to participate in any type of physical fitness program.

In late 1968 a cautious program of elective surgery was instituted and will be carried forward in 1969 to correct deformities in these patients. This program requires close collaboration with the hemotological services at The New York Hospital. Several research programs are underway to study further the severe disabling changes which occur in the joints of these children subjected to recurrent bleeding episodes.

Hip Clinic (Dr. Philip D. Wilson, Jr.): The Adult and Children's Hip Clinics and the In-Patient Services were active in 1968 with 202 new patients seen in the Hip Clinic and 86 patients operated on for hip conditions. The Total Hip Replacement procedure introduced in 1967 was further developed during the year.

The first two years of the Newborn Congenital Dislocated Hip Detection Program were completed in June of 1968. At that time a total of 6,738 babies had been examined with the finding of 97 babies (1.4%) who had hip instability. This program

is continuing, and re-examination of a control group of babies (who had been called normal at birth) has been started.

Dr. Merrill A. Ritter's and Dr. Philip D. Wilson, Jr.'s report, "Colonna Capsular Arthroplasty — A Long-term Follow-up of Forty Hips," was published in the Journal of Bone and Joint Surgery. A paper, "Age and Weight in Osteoarthritis of the Hip," written by Drs. Paul D. Saville and Jesse Dickson was published in Arthritis and Rheumatism.

A follow-up study of patients who have undergone cup arthroplasties for rheumatoid arthritis of the hip is being completed by Dr. Victor Mayer. Reports will be presented to the American Orthopaedic Association in June, 1969, on the clinical and fundamental research into total hip replacement which has been carried on jointly with the Bioengineering Laboratory.

The following projects are underway: Dr. Leon Root — Investigation of Patients with Legg-Perthes Disease; Dr. Robert Diaz — Spontaneous Dislocation of the Hip, and Dr. Robert A. Goldstone is preparing a follow-up questionnaire for periodic re-evaluation of patients followed in the Hip Clinic.



Patients receiving occupational therapy from therapist (2nd from right).

Center: Residents consulting during examination of patient.

Bottom: Patient receiving occupational therapy following hand surgery.

The success of the Clinic has been considerably enhanced by the work of its secretary, Mrs. Irene Perhac, and of the assigned physiotherapist, Miss Helen Powers. Dr. Alfredo Czerniecki, Hip Clinic Fellow, has carried a tremendous work load and contributed a great deal to the teaching and research activities. Drs. Harlan C. Amstutz, Victor Mayer and Leon Root have also contributed heavily.

Knee Clinic (Dr. Göran C. H. Bauer): The common denominator of patients referred to the Knee Clinic is pain in the knee in the absence of recent trauma and rheumatoid arthritis. Children are not referred to this Clinic. In addition to routine clinical and radiographic examinations, the diagnostic facilities include double contrast arthrography, X-rays under weight-bearing conditions, and ^{85}Sr scintimetry. The majority of patients are found to suffer from osteoarthritis, often of an extreme degree and associated with significant deformity.

During the last two years attention has been focused on a peculiar lesion in the knee, osteonecrosis of the medial femoral condyle, which seems to be a hitherto unrecognized cause of persistent pain. The condition sometimes leads to severe osteoarthritis. Recognition of this particular lesion is interesting in the sense that the cause of osteoarthritis in the aged is unknown but is generally believed to be associated with a primary, age-related lesion in the articular cartilage. Osteonecrosis, however, starts in bone and involves cartilage only secondarily.

At present 50 such patients have been identified. About 10% of the patients seen in the Knee Clinic are being operated on. In osteoarthritis with deformity the most common operation is high tibial osteotomy in an attempt to restore function by shifting the body weight over to a less involved part

of the knee joint. Dr. John Insall and Dr. Tomihisa Koshino are now reviewing 85 patients following this operation. Osteotomies have also been performed for osteonecrosis, and other operations have included meniscectomy.

In an effort to systematize observations made in the Knee Clinic into the fashion of a prospective study, all observations are recorded in a form suitable for automatic data processing and retrieval. This material is at the present being analyzed by Drs. Walther Böhne and David Anderson in the course of their clinical investigations. Observations in the Knee Clinic are discussed in the Report of the Director of Research.

During 1968 the Knee Clinic had 797 visits including 129 new patients. A total of 38 operations were performed.

Orthopedic appliance craftsman works closely with physicians to aid patient's recovery.



Leg Equalization and Juvenile Amputee Clinic (Dr. Harlan C. Amstutz): This Clinic has continued to expand, and its growth is reflected in following statistics: 49 new patients seen in 1968 compared to 43 in 1967 and 305 revisits made in 1968 compared to 134 in 1967.

Eleven of the new patients were classified as amputees because they had had recent amputations or required a prosthesis, shoe elevations no longer being sufficient to balance the leg length discrepancy. Twenty-nine operative procedures were performed, more than double the 1967 total.

The morphological natural history, classification and treatment of proximal femoral focal deficiencies was presented at a National Research Council Symposia in Washington, D. C., in May, 1968, and is scheduled for publication in 1969.

Metabolic Bone Disease Clinic (Dr. Paul D. Saville): In 1968 the number of total clinic revisits was 274 and that of new referrals 41. During the year the Clinic accomplished much with the able assistance of Dr. Walther Böhne, Dr. Italo Zanzi and Dr. William Crutchlow.

^{85}Sr Kinetics was measured in 60 patients suffering from spine fractures due to osteoporosis. In many of these the study was repeated after medication with 50,000 iu of Calciferol daily for 2-5 months. The accretion rate was low in all patients except those who had had partial gastrectomy, in whom it was high like osteomalacia.

Accretion rate was significantly correlated to alkaline phosphatase, suggesting that accretion is importantly related to bone formation. The exchangeable pool was significantly correlated to body weight which is itself correlated to skeletal size and extra cellular fluid space, all of which is reassuring with respect to the meaning of these calculations.

All information on 136 bone metabolic patients was punched onto cards which were fed into the Quicktran Computer. The data was sorted and printed out in various ways, and it was found that the 12th thoracic vertebra was the commonest one to be fractured in osteoporosis. The frequency decreased symmetrically upwards and downwards from there. Spine fractures in osteoporotics do not occur above T3. sixteen per cent of women with spine fractures sustained new fractures after attending the Clinic irrespective of treatment.

Neuromuscular Diagnostic Service (Dr. Joseph Moldaver): The Neuromuscular Diagnostic Service continued to work in conjunction with the Orthopaedic Clinics as in the past. The number of cases in which orthopaedic patients required neurological evaluations was such that it was felt that a combined clinic would be advisable. The name was changed, therefore, to "Neuro-Orthopaedic," and patients were seen at the same time by both the orthopaedist and neurologist. This team-work approach was felt to be imperative to all concerned, patients and physicians, as it facilitated the work-ups and avoided unnecessary trips for patients. The combined Neuro-Orthopaedic Clinic also offered the obvious necessary basic neurological training for the Orthopaedic Residents.

A large number of peripheral nerve neuropathies, either complications of fractures or due to other conditions, were seen routinely and followed up, and it was often necessary to perform electrodiagnostic studies of nerves and muscles on many of these patients. In cases where diagnostic workup for repair and reconstruction of the hand was contemplated, a neurological examination as well as electrodiagnostic studies were frequently requested.

Among the patients referred to our Clinic,

some had quite extensive asymptomatic bony pathology of the cervical spine resulting from involuntary movements of the neck musculature due to basal ganglia pathology. Many of those patients prior to coming to the Clinic were treated by unnecessary, although standard approaches, such as traction or even cervical spine fusion. The therapeutic approach in those patients with involuntary motions of the neck musculature is under study.

The Service has also been helpful to Department of Rheumatic Diseases' patients in whom complications of muscular diseases as well as neuromuscular diseases were encountered.

Orthopaedic-Psychiatric Liaison Service (Dr. James W. Brown): The main focus of the Liaison Service this year has been on trying to improve the efficiency and effectiveness of the Service through an increased appreciation by medical and para-medical personnel of situations where emotional factors play an important role. Particular emphasis was placed on early diagnosis of emotional difficulties prior to the institution of any major medical or surgical programs.

Potential additions to the Service during the forthcoming year may include:

- 1) Group therapy programs by Social Service Caseworkers for certain specialized groups (i.e., intelligent, minimally impaired Cerebral Palsy patients who are entering adult life and having difficulties coping with the stresses and strains of this period).
- 2) The part-time services of a psychologist from Payne Whitney Clinic who has particular experience and interest in childhood and adolescence.

Scoliosis Service (Dr. David B. Levine): Interest in scoliosis continued to run at a high level in the professional staff in 1968.



Patient in halo traction

Dr. David Levine presented a paper on "The Use of the Halo in the Operative Management of Spinal Deformities", co-authored with Dr. John H. Doherty at the Tri-City Orthopaedic Meeting in Washington, D. C., in April. Dr. Konstantin Veliskakis presented a paper on "Neurofibromatosis

and Scoliosis" at the Scoliosis Research Society Meeting in Houston co-authored with Dr. Philip D. Wilson, Jr., and Dr. Levine in September. Dr. Robert Wilson presented a paper at the Alumni Meeting in November on "The Use of Pre-operative Traction in the Operative Management of Scoliosis," co-authored by Drs. Levine and Doherty. Dr. Levine's paper, "The Influence of Spinal Deformities on Chest Function," was published in the Journal of the American Physical Therapy Association.

A number of studies are presently in progress: The Roentgenological Aspects of Scoliosis, Drs. Robert H. Freiburger, Robert L. Diaz and Dr. Levine; The Problem of Dysautonomia and Scoliosis, Dr. Doherty and Dr. Stephen Bethea; A Critical Cardiopulmonary Evaluation of the Scoliosis Patient, Drs. Irwin Nydick, James P. Smith, Anita Goulet, Wan Ngo Lim, Veliskakis and Levine. Planned for the near future is a comprehensive study involving basic research of Idiopathic Scoliosis in the Adolescent.

In 1968, 968 patients were seen in the Scoliosis Clinic, of whom 94 were new patients, and 66 patients had 91 operative procedures on the Scoliosis Service. The Pulmonary Laboratory has performed 207 pulmonary studies for the Scoliosis Service, and the Brace Shop has provided over 170 Milwaukee Braces for scoliosis patients.

Twelve members of the Resident Staff rotated onto the Service for 2 month periods in their junior and senior years. Scoliosis Rounds and the Scoliosis Clinic were held weekly, and selected patients were examined in the Scoliosis Cardiopulmonary Clinic which met monthly.

Department of Anesthesiology (Dr. Charles L. Burstein): During 1968 the following types of anesthesia were administered to 2,519 patients: 2,162 general, 165 regional, 29 spinal, and 163 local.

Gratifying results were obtained in a study to diminish operative bleeding and thereby reduce or eliminate blood transfusion. This consisted of producing a mild degree of arterial hypotension combined with the intravenous administration of conjugated estrogens.

Residents in Anesthesiology from The New York Hospital rotated through our Operating Suite for periods of six weeks each to learn problems and techniques associated with orthopaedic surgery. The Anesthesiology Department also participated in lectures to Cornell University Medical College students.

Department of Laboratories (Dr. Robert C. Mellors): The number of laboratory examinations performed in 1968 once again set a record (128,185), reflecting a 6 per cent increase over the preceding year in the number of services rendered.

Bacteriology	10,127
Chemistry	26,199
Hematology	54,643
Serology	18,299
Urinalysis	15,003
Body Fluids	451
Spinal Fluids	460
Miscellaneous	3,003

Hematology determinations again showed a substantial increase over those performed last year. Consumption of blood has increased along with more extensive surgery. This year the use of packed cells rose to constitute about 33 per cent of all transfusions.

With the expansion of care for hemophiliacs, the use of antihemophilic globulin increased to 37 units in 1968. Use of cryoprecipitates constituted a remarkable

improvement in the care of hemophiliacs, and further refinements in AHG concentration can be anticipated.

The Microbiology Laboratory processed a total of 7,197 specimens from clinical sources, research problems and epidemiologic control studies in the hospital. Antibiotic sensitivity tests were performed on 2,049 bacterial isolates of potential pathogenic significance.

The Clinical Laboratory has been conducting a collaborative investigation with Dr. Robert Lee Patterson, Jr., on diagnostic methods relating to joint involvements in which pseudogout and chondrocalcinosis is suspected.

There were two changes in the professional staff during the year. Dr. Michael Lyons resigned to become Associate Professor of Pathology at the newly forming Medical School of the State of New Jersey, and Dr. Peter G. Bullough, formerly of the Nuffield Orthopaedic Centre, Oxford, England, joined the staff as Associate Attending Pathologist and Associate Scientist in charge of Experimental Pathology.

Looking back with hope and trust.



Pediatric Division (Dr. Wan Ngo Lim):

Pediatric House Officers as well as Attending Pediatricians of The New York Hospital continued to care for children and adolescents at The Hospital for Special Surgery. The cooperation and interest shown by the Surgical Staff in pediatric problems permitted better patient care and stimulated research and educational activities.

We are most grateful for the prompt and efficient services given by members of the Staff of various divisions of The New York Hospital. During the past year Neurology Residents participated in Pediatric Rounds which proved to be mutually beneficial. In July of 1969 a new Attending Pediatrician with special experience in growth and development will join the Staff and help with many problems in this area.

Some illuminating medical data on medical problems with the scoliosis patients have been collected, and it is hoped that these data will be of sufficient volume to merit reporting in the near future.

Department of Physical Medicine and Rehabilitation Including Occupational Therapy (Dr. Anna Kara): In 1968 Physical Therapists gave 34,753 treatments and Occupational Therapists 2,585 treatments at The Hospital for Special Surgery. In addition, Physical Therapists gave 434 treatments at James Ewing Hospital and 60 treatments at Memorial Hospital until May 31, 1968 as well as treating patients at Rockefeller Hospital upon request throughout the year.

The facilities of the Department were altered to include a second gymnasium, resulting in more space and providing more time for patients receiving exercise programs and gait training in both gymnasium areas. Special exercise tables were added to both areas to ease patients' transfer from wheelchair or stretchers.

Five Physical Therapists participated in the following specialty programs: Scoliosis, Hip, Hemophilia, Comprehensive Arthritis Program and Amputee. Each therapist worked closely with the physician in charge of the specialty area and saw the patient in the clinic, or at conference, with the doctor. The physical therapy treatment was then carried out by the same therapist with the patient on either an out-patient or in-patient basis. Miss Helen Powers, RPT, assigned to the Hip Program, assisted in checking new-born babies at The New York Hospital for possible congenital dislocated hips.

The Department continued its program of clinical education for Physical Therapy and Occupational Therapy students and during 1968 trained eight Physical Therapy student affiliates from Columbia University, five from Downstate Medical Center in Brooklyn and two from the University of Maryland as well as two Occupational Therapy students from Tufts University, Boston School of Occupational Therapy.

The In-Service Training Program continued to be active with Orthopaedic Surgeons lecturing on types of surgery and orthopaedic disabilities, Physical Therapists discussing treatment programs, and Department Heads from other areas of the Hospital discussing functions of various departments. Physical Therapy students presented case studies and discussed particular orthopaedic disabilities they have worked on during their affiliation here.

During the year members of the Staff attended meetings, courses and seminars in physical medicine and rehabilitation held in this country and in Canada.



Radiologist operates image intensifier; example of hospital's latest equipment.

Department of Radiology (Dr. Robert H. Freiburger):

Statistics for the year 1968 showed an increase of approximately 1,500 in the total number of examinations performed or 4.4 per cent over 1967. During the year a total of 36,844 X-ray examinations were performed, comprised of 34,213 routine examinations and 2,631 special examinations. The number of arthrograms performed increased to 959, almost double the 1966 total.

This increased work load was facilitated by the addition of two new radiographic examining rooms, one equipped with a body section tomogram with an image intensification fluoroscopic system and a second general radiographic room. A third film demonstration machine was added for X-ray film interpretation and teaching.

Changes in the Department's Staff occurred when Dr. Paul J. Killoran, Assistant Director of Radiology, resigned in August to accept a position as Chief of Radiology at Rockland and Camdem Hospital in Maine and Dr. Margaret O. Harrison accepted a position as Assistant Radiologist in October.

During the year third and fourth year Cornell University Medical College students spent elective periods in the Radiology Department, and Department members continued their contribution to the New York Hospital-Cornell University Medical College Radiology Residents Teaching Program.

The weekly conference format changed with a teaching file conference held on Wednesdays from 6:30 to 8:00 P.M. and a Radiology-Pathology Conference held on Thursdays at 4:30 P.M. Dr. Peter Bullough taught pathology at this latter conference.

An X-ray research room on the fifth floor of the Research Building has been built, and equipment installation should be finished by Spring, 1969. This equipment will enable us to produce X-ray motion pictures of joint motion and permit the performance of special X-ray procedures on patients as well as experimental animals.

Drs. Robert H. Freiburger and Paul J. Killoran gave many lectures on arthrography, roentgen findings in various types of arthritis and other topics, and Dr. Freiburger completed a chapter on Orthopaedic Radiology for the book, *Modern Trends in Orthopaedics*, and with Drs. Killoran and Ralph C. Marcove a paper on Shoulder Arthrography published in the *American Journal of Roentgenology*, Radium Therapy and Nuclear Medicine. Dr. Makoto Furuya, Fellow in Orthopaedic Radiology, produced a computer data analysis of 2,100 knee arthrograms.

Department of Rheumatic Diseases

(Dr. Richard H. Freyberg): At the end of 1968, the Comprehensive Arthritis Program completed 16 months of activity. In this period of time 102 patients were evaluated in the Program's Consultation Conference. Of these, 92 were accepted on the Program, and their prolonged treatment was started. 165 surgical operations have been performed on these patients. These were of a wide variety, but most were synovectomies, some with insertion of prostheses or other reconstructive aspects. The Staff responsible for the Comprehensive Arthritis Program is convinced that this is the best way to provide care for the severely ill arthritic patients who have complicated treatment problems. The Program will continue and probably will be expanded.

In conjunction with the Comprehensive Arthritis Program, the Staff joined in a multi-center five-year research program to evaluate "early" synovectomies done before joint damages have occurred. Dr. Emmanuel Rudd is the physician coordinating this research.

The Department continued to operate an active In-Patient Service for patients with less complicated Rheumatic Diseases; the census averaging about 8 to 10 patients in the 1st division semi-private status and 20 patients in 2nd division semi-private, or private classification. The Service Clinics for Rheumatic Diseases, held three mornings a week, continued to be actively attended. Consultation Rounds in which Fellows, House Officers and representatives of the Attending Staff participated were held every Friday afternoon and proved to be of value to patients as well as superb teaching experiences. In addition, Journal Clubs held twice a month were stimulating and educational.

During the year the Staff participated in varied clinical investigations including extensive studies of collagen, its antigenic properties and antibodies of species specifically against collagen; the metabolism of gold in humans administered gold compounds as used in treatment of rheumatoid arthritis, employing newly developed analytical techniques; study of the natural history of ankylosing spondylitis and effectiveness of different treatments used for this rheumatic disease; study of breakdown products of collagen and then excretion; immunologic deviations observed in rheumatoid arthritis and related conditions; study of reformation of synovial lining in joints after surgical synovectomy, the frequency and degree of inflammation that may occur in joints after synovectomy; differences in hydrolytic enzyme production in inflamed rheumatoid synovium and in the newly reformed synovium (after synovectomy); hazards of tuberculous infection during prolonged corticosteroid treatment of rheumatoid arthritis; and effectiveness of immuno-suppressive agents used as treatment for rheumatoid arthritis and other diffuse connective tissue disorders.

A new elective course for senior medical students of Cornell University Medical College, a series of eight seminars dealing with various subjects relating to rheumatic diseases, was conducted during the second college module and attended by eight students.

EDUCATION

Undergraduate Education (Dr. Allan E. Inglis): An important change has occurred in the admission of medical students to Cornell University Medical College. Normally, there are about 1,000 applicants for 80 positions in the first year class with all students having achieved high academic records from high ranking colleges and universities. Cornell University Medical College has decided to change its matriculation policy to include acceptance of a group of disadvantaged students into the freshman class. This group will be carefully selected and given special help in their work. This assistance should permit these students with substandard preparation for medical school to compete successfully with their classmates, but will place added teaching responsibilities upon the educators and their assistants. It is a needed program that should provide improved racial and cultural balance within the physician ranks of our country.

The third year Cornell Medical students were assigned to The Hospital for Special Surgery in groups of ten and were tutored by Drs. David Levine, Leon Root, Eugene Lance and Allan Inglis on Thursday afternoons. During these periods the students were assigned certain pre-arranged

Radiologist dictates interpretation of x-ray films to assist surgeon in diagnosis.



patients whom they evaluated and then presented to their classmates for further study and discussion.

The fourth year medical students came to The Hospital for Special Surgery on an elective basis and selected one or more courses from a list of 14 electives offered. These elective courses are designed not only for the student interested in clinical orthopaedic surgery, but also for the student interested in pediatrics, internal medicine or basic research.

The T. Campbell Thompson Award for "proficiency in orthopaedic surgery" was given this year to Robert Marcus for his abilities in orthopaedic surgery and his paper on finger deformities in rheumatoid arthritis.

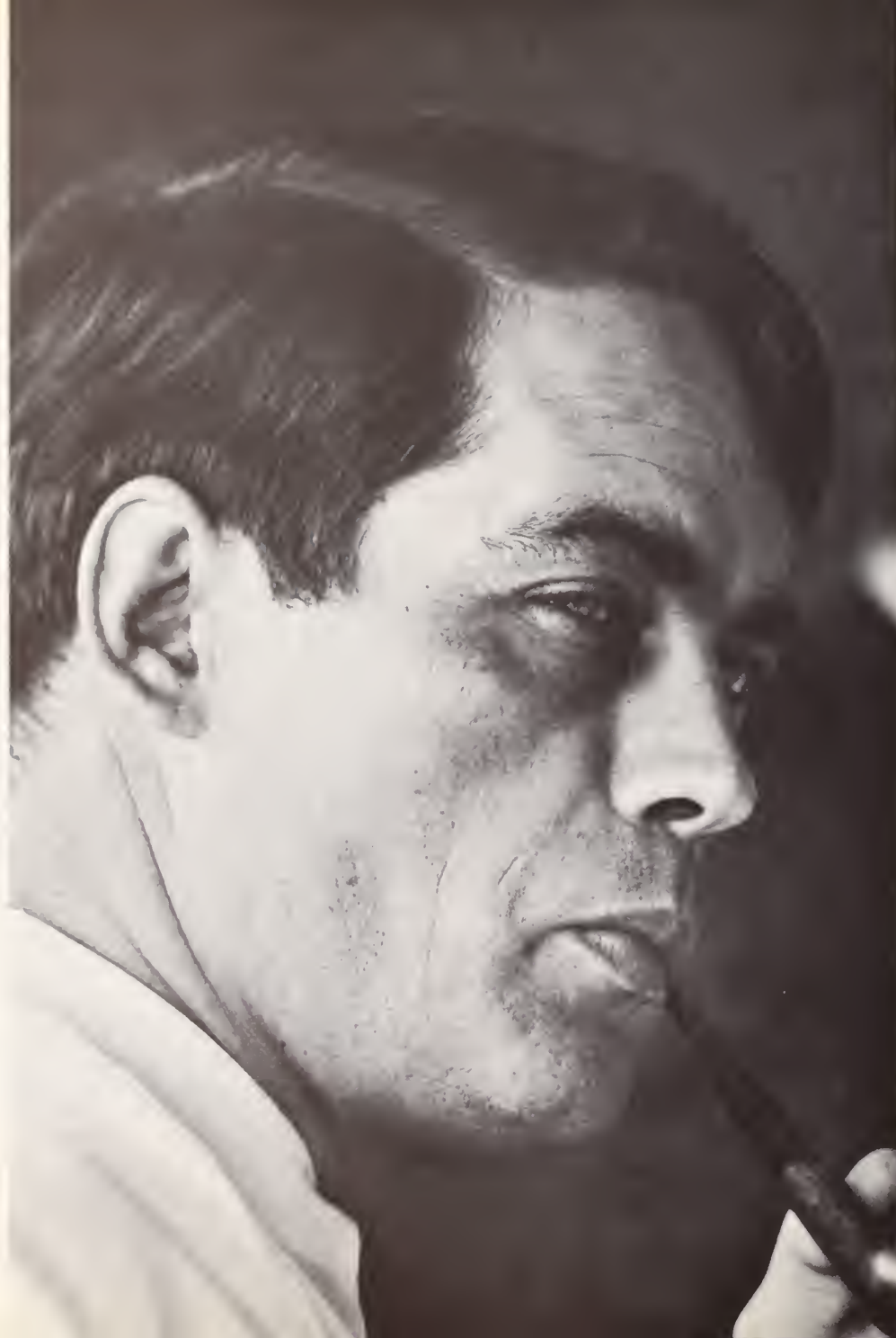
Veterans Administration Hospital Resident Training Program (Dr. Bernard Jacobs): This year has seen a further increase in out-patient activities and acute trauma problems. A total of 8,430 out-patients were examined. There were 199 answered consultation requests from other in-hospital sections. Total admissions numbered 655, with 263 operative procedures and 753 plaster applications.

There has been a considerable increase in patient flow from Vietnam, many of them presenting challenging reconstructive problems. Washington selected the Bronx Veterans Administration Hospital as a National Spinal Injury Center, which fortuitously coincides with our current survey of the Orthopaedist's role in the care of the spinal injury patient.

Robert Lee Patterson, Jr., M.D.
Surgeon-In-Chief



In a teaching hospital many hours are spent in the medical library



Report of the Director of Research — Annual Report 1968

President Perkins of Cornell University has identified the academic contribution to society as essentially the tripartite acquisition, dissemination and application of knowledge. In a hospital these three commitments are closely interrelated: effective treatment of patients requires innovation and valid evaluation of results, while teaching effects an orderly supplanting of old knowledge with new. As an introduction to the individual research reports I will attempt to demonstrate how research relates to patient treatment at The Hospital for Special Surgery. Teaching was discussed in last year's report.

Our Hospital was founded when fractures were managed without the aid of x-ray examinations, and infectious processes without antibiotics. Rickets was prevalent because vitamins had not yet become a household staple. Time scales of centuries are not required, however, to identify dramatic breaks with the past in the diagnosis and treatment of disease. By 1940 nailing of fractures of the hip was a common procedure, bone infections were treated with antibiotics, and surgery for a slipped intervertebral disc was routine. Less than one decade earlier, none of these procedures existed.

In our own Hospital similar dramatic changes occur continuously in such diverse areas as congenital dislocation of the hip, osteoarthritis of the hip and the knee, scoliosis of the spine, rheumatoid arthritis and bone disease associated with kidney abnormalities. In all of these conditions current diagnostic and therapeutic procedures relate to research activities here.

Congenital dislocation of the hip, if left untreated, leads to severe pain and

instability. Previously, the diagnosis was usually made when the child started to walk. Treatment often involved surgery and invariably plaster fixation for lengthy periods. Even with this treatment the hips rarely developed normally and often caused severe problems in adult life. In 1966, based on observations elsewhere, Dr. Philip Wilson, Jr. introduced a method of examination of the hips in the newborn at New York Hospital. To date more than 10,000 babies have been examined. Unstable or dislocated hips discovered in this way are now treated for only a short period of time in a simple splint, and the majority of these hips remain normal. The early diagnosis of this condition has thus led to a simple and effective treatment of a previously crippling condition. In parallel with these clinical studies, the research team headed by Dr. Sten-Erik Olsson has studied this condition in dogs, notably the German shepherd. They have observed that it can be caused by certain hormonal abnormalities and they are at present pursuing research which may well lead to detection of the condition by a biochemical test.

Osteoarthritis of the hip joint — Painful hip joints caused by fracture, rheumatoid arthritis or other changes in bone and cartilage are common in elderly patients. Surgical treatment has increasingly involved substitution of either the ball or the socket of the joint with a metallic implant or arthroplasty. Unfortunately, friction between the metal on one side of the joint and bone or cartilage on the other causes excessive wear of bone and creeping of the implant with eventual malfunction of the joint. Dr. Philip Wilson, Jr. has, therefore, recently introduced a method of arthroplasty of the hip joint in which both the ball and socket are replaced with metal implants to create a total artificial joint. Seventy-five patients have had this operation to date, and the results strongly suggest that total hip

arthroplasty may well become the method of choice in a wide variety of hip problems. Clinical progress in this field is intimately linked to studies in the Bioengineering Laboratory. Under the direction of Dr. Harlan Amstutz, components presently used for total hip joint arthroplasty are evaluated in that laboratory and new materials are tested mechanically for wear and friction, and in test animals for biological compatibility. In partial collaboration with Dr. Sten-Erik Olsson, for example, glues for anchoring the metal prosthesis in bone have been tested for toxicity and reliability. As a further example of the interrelationship between clinical and research activities, Dr. William Crutchlow performs radionuclide tracer measurements which aid in the selection of suitable treatment for hip disease.

Osteoarthritis of the knee — Three years ago a clinic was organized for treatment of patients with osteoarthritis of the knee, a condition characterized by pain, cartilage destruction and bowleg or knock knee deformity. Data from clinical, radiographic and radionuclide examinations of some 800 patients have been stored and processed with the aid of a computer. This research project has resulted in a better understanding of the cause of osteoarthritis of the knee and fundamental changes in diagnosis and treatment. Prior to this study patients with osteoarthritis of the knee were rarely subjected to surgery because they are always of advanced age, are often overweight, and sometimes suffer from heart disease, all factors which may complicate surgery. Now nearly 100 patients have undergone a simple operation aimed at restoration of the normal weightbearing relations in the knee. The results indicate

that this more active treatment will become a common procedure in this condition. The research component in this development is clearly reflected in the computer analysis and laboratory studies.

Scoliosis — During the past three years treatment of scoliosis, curvature of the spine in the young, has changed profoundly. Previously the majority of children with significant scoliosis were uniformly treated surgically; before and after operation heavy and cumbersome plaster casts were used for stabilization of the spine for prolonged periods. Present treatment is more individualized, ranging from the non-surgical stabilization and correction of the spine with braces to rapid correction in traction, surgical stabilization of the spine with metallic implants and less cumbersome and shorter treatment in plaster. In addition, the heart and lungs are carefully studied in the most severe cases of scoliosis before and after treatment. Finally, in an effort to further individualize the diagnosis and treatment of scoliosis, Dr. David Levine and Dr. Aaron Posner have undertaken a joint study of the collagen structure in certain types of scoliosis.

Technologist assists in endless search for answers to medical problems.



Rheumatoid Arthritis — During the past five years treatment of rheumatoid arthritis has undergone a drastic change through increased collaboration between internists and surgeons as emphasized in this Annual Report. The number of patients operated and different procedures used have increased sharply. The approach to clinical diagnosis and treatment in rheumatoid arthritis has become broader, and the goal for therapy in each case more clearly defined. Dr. Chitranjan Ranawat and Dr. José Granda are continuously monitoring patients who have had synovectomy for rheumatoid arthritis of the knee; it seems that the results of surgery, often difficult to evaluate, may have an objective counterpart in certain enzyme studies. Whereas the etiology of rheumatoid arthritis is still obscure, experimental work here suggests that the mechanism whereby cartilage is destroyed involves certain enzymes which are now being characterized by Dr. Granda. Therapeutic interference with these enzymes may prove one approach to minimizing the effects on cartilage and tendons in rheumatoid arthritis.

Kidney disease and skeletal problems — Patients with kidney disease develop severe skeletal abnormalities: growth disturbances in the young and fractures in adults. Now that the basic disease can be corrected by kidney transplantation, skeletal deformities can be corrected surgically. However, the drug therapy needed for survival of kidney or heart transplants may cause other problems, notably destruction of weightbearing bone in hip and knee joints. Our Metabolic Bone Clinic and Radionuclide Laboratory staff have participated with the New York Hospital transplantation teams in a program designed to prevent and treat skeletal abnormalities associated with kidney disease. Dr. Eugene Lance is making a special contribution here. Based on his previous animal experiments, the drug



Research team at work in laboratory.

therapy aimed at suppression of adverse immunologic phenomena in the recipient of heart, kidney and other transplants has been substantially modified. The cortisone medication has been decreased and secondary bone reactions will probably decline.

The examples of fundamental changes in the clinical diagnosis and therapy of major orthopaedic problems given here are paralleled by similar changes in virtually all aspects of orthopaedics and rheumatology. On the clinical level the organization of The Hospital for Special Surgery is ideal for integration of the care of individual patients with research and teaching: the majority of the patients are seen by teams of physicians based on etiology of the condition and regional or organ system affected. Typically such a team consists of a senior and a junior staff member, a fellow assigned for one or two years, and residents assigned for two or three months on a rotation schedule. Formal links to the research laboratories are being strengthened at these three levels of clinical competence. Medical advances have resulted from this specialization on the clinical level and formulation of general concepts on the experimental level while these two approaches to medicine become increasingly integrated at our Institution.

DIVISION OF RHEUMATIC DISEASES

Richard H. Freyberg, M.D.

A program of investigation of several unrelated clinical problems of rheumatic diseases continues to be pursued.

Dr. Bento Mascarenhas and Dr. José Granda are in the midst of an extensive research of gold metabolism in patients with rheumatoid arthritis being treated with gold compounds, in an effort to clarify the manner in which gold preparations produce their effects, and thereby to improve his form of therapy. The amount of gold excreted into the bowel was surprisingly large, compared to earlier findings; this had led us into further studies of excretion mechanisms and the manner of transport of gold in the blood.

Various studies relating to surgery for arthritis, especially rheumatoid arthritis, are under way. These are correlated with the Comprehensive Arthritis Care Program; rheumatologists and orthopedic surgeons collaborate with research scientists in these investigations. The prophylactic as well as therapeutic benefit of synovectomy performed early in the course of rheumatoid disease is being studied in a multicenter project sponsored by the Arthritis Foundation. Dr. Emmanuel Rudd is the physician coordinator of this study in which the entire staff of the Comprehensive Arthritis Program participates. A review of early post-operative results of synovectomy for rheumatoid arthritis is being made by Dr. C. Ranawat. Of particular interest is the anatomic and physiologic study of the newly formed lining of joint capsules from which inflamed synovium has been removed as treatment for rheumatoid arthritis. To what degree and under what circumstances this new membrane becomes inflamed, and its production of hydrolytic enzymes are the chief subjects of investigation.

The time of development of structural

damages of cartilage and bone which cause dysfunction, deformities and crippling of joints in rheumatoid disease is a study which continues, with attention now being focused upon factors which may influence these changes — such as age and sex of the patient, duration and severity of disease, weight-bearing function of the joint and the type of treatment employed. Information gained from this research should be of practical value in the timing of synovectomy, especially if employed for prophylactic reasons.

Dr. Michael Hoffman and Dr. J. Granda have initiated a study of collagenase production by inflamed synovial tissue and will relate the results with destruction of articular cartilage which occurs after prolonged synovitis in rheumatoid disease.

Investigation has been started by Drs. M. Gardy, M. Hoffman and M. Rivelis of several aspects of the disturbances of immunity which occur in rheumatoid disease, and the effect of an immuno-suppressive agent, Chlorophosphamide, on these.

The frequency of occurrence of active tuberculosis in patients receiving prolonged Corticosteroid therapy, and factors which influence this complication, are being studied by Dr. Bruce Nitsberg.

The review study of ankylosing spondylitis by Dr. M. Rivelis is nearing completion. An interesting complication of this form of arthritis, characterized by destruction of vertebrae causing spinal kyphosis is being separately reported.

The cooperative study of Dr. Harry Bienenstock and Dr. Andre Kiprick of the Institute of Muscle Diseases, on the metabolism of propylhydroxproline, has been completed and has been submitted for publication.

Various new medications with potential value for different rheumatic diseases are being critically evaluated.

The extensive research regarding the nature and properties of collagen, and its relation to membrane diseases is being continued by Dr. Sidney Rothbard and Dr. Robert Watson, and will be separately described by them.

LABORATORY FOR THE STUDY OF COLLAGEN

**Sidney Rothbard, M.D., and
Robert F. Watson, M.D.**

The report, "Comparison of Reactions of Antibodies to Rat Collagen and to Rat Kidney in the Basement Membrances of Rat Renal Glomeruli", has been accepted for publication in the *Journal of Experimental Medicine*. A preliminary report of these studies was presented at the interim scientific session of the American Rheumatism Association in Atlanta, Georgia, on December 5, 1968.

This study attempted to clarify the confusion that has resulted from the similarity of immunofluorescence of injected antibodies to kidney and to collagen. These antibodies each show the same regular linear fluorescence following the outlines of the rat renal glomerular capillaries. Absorption of each antiserum with its homologous antigen completely removed the antibody for immunofluorescence, while absorption with the heterologous antigen had no effect. The nephrotoxicity persisted in the anti-kidney serum absorbed with collagen.

Pre-treatment of frozen normal rat kidney sections with various enzymes followed by immunofluorescence showed that trypsin, hyaluronidase, and neuroaminidase had no effect on the subsequent fluorescence of either antibody; papain reduced the fluorescence, and pepsin and pronase acted on both antigens so that no fluorescence was present. Collagenase



Ultimate aim of research is to aid physician in cure of patients disease or correction of disability

completely prevented fluorescence of antibody to collagen and had no effect on that to rat kidney (Fig. 1).

These findings show that the antibody to collagen is directed to collagen in rat renal glomerular basement membranes and that the antibody to rat kidney reacts with some antigen or antigens other than collagen in these membranes.

Studies of experimental osteolathyrism have been undertaken in this laboratory to determine whether the collagen from lathyrotic rats has antigenic properties different from normal collagen. Osteolathyrotic rat embryos were obtained by injecting beta-aminopropionitrile into pregnant rats and showed a variety of skeletal and vascular deformities. Many of the lesions of lathyrism resemble the pathologic fibrosis in the cardiac valves of patients with rheumatic fever, the joints of those with rheumatic arthritis, and the viscera of those with scleroderma.

Collagens extracted and reconstituted from lathyrotic and normal rat embryos appeared by electron microscopy to be the same with the characteristic periodicity (Fig. 2), but the lathyrotic collagen has increased solubility and marked loss of tensile strength. Collagens from normal and lathyrotic rat embryos have been used to immunize rabbits. Preliminary studies suggest that the antigenicity of lathyrotic collagen does not differ from that of normal collagen and thus is not affected by the breaking of the intra- and intermolecular cross-linkages by the lathrogenic agent.

The production of collagen injury by injection of antibodies to collagen is also being attempted by injection into rats in early pregnancy. This approach may provide a means of injuring collagen in the embryo when it is most vulnerable.

Further evidence of the specificity of the collagen-anticollagen system has been

obtained by the immunodiffusion technique with rat, mouse, guinea pig, and chicken collagens and their respective antisera. However, immunoelectrophoretic studies have been hampered because of the low titer of the antibody. Concentration of the antisera by salt fractionation is now being undertaken.

These studies confirm and extend our earlier findings that antibody to collagen is directed specifically to the collagen fiber and not to any tissue impurity.

DIVISION OF EXPERIMENTAL PATHOLOGY

R. C. Mellors, M.D., Ph.D., P. G. Bullough, M.B., Ch.B., C. Y. Huang, Ph.D., L. Korngold, Ph.D., L. J. Kutner, M.D., Ph.D., Lea Sekely, Ph.D., Krzysztof Krawczynski, M.D., a visiting scientist from the State Institute of Hygiene, Warsaw, Poland.

This division includes laboratories of immunopathology, chemical pathology, experimental pathology, electron microscopy, immunology, and microbiology devoted to research in orthopedic and rheumatic diseases. During the year additional collaborative studies were carried out with scientists at the office of the Medical Examiner of the City of New York, the Sloan-Kettering Institute for Cancer, and the National Institutes of Health.

Connective-Tissue Diseases — Rheumatoid arthritis is one of the major chronic inflammatory diseases in our country today. While much studied, the cause of rheumatoid arthritis and related connective-tissue diseases, such as lupus erythematosus, is unknown. The association of autoimmunity, as evidenced by the formation of rheumatoid factor and lupus factor, with the

connective-tissue diseases has focused attention on the immune system as a factor in these diseases. The discovery in New Zealand of an inbred strain of mice, called NZB mice, which develop both a connective-tissue disease resembling human lupus and an associated autoimmune disorder has provided scientists throughout the world with a most challenging experimental model of the corresponding human diseases. Our early studies pointed to a filterable virus-like agent as a cause of the connective-tissue and autoimmune disorders of NZB mice. Within the past year, the viral agent has been further characterized as a murine leukemia-like virus, (Fig. 3) thus providing a possible new link between autoimmunity, connective-tissue disease, and lymphoid neoplasia of this experimental animal. This observation is all the more compelling in as much as a similar association of lymphoid and connective-tissue disorders, or transitions between them, is sometimes seen in man. While the cause of human connective-tissue diseases remains unknown, a search for atypical viruses or other infectious agents merits scientific attention.

Osteogenesis Imperfecta — The electron microprobe, widely used in industry, permits one to analyze the chemical composition and the microscopic structure of a specimen in minute regions falling within the size range of light optical resolution. Sometime ago, we were awarded a research grant for the application of the microprobe mainly in the study of bone and cartilage in health and disease. Much time and effort were spent by Mr. Todd Solberg in adapting the instrument and in developing analytical procedures for our special needs. Within the last year, this work has achieved fruition in that it was possible to determine the content (weight %), the molecular ratio, and the profile of distribution of calcium,



Research physician checks intricate equipment

phosphorus, and magnesium in the mineral phase and of sulfur in the organic phase of human bone and cartilage. It was found that in normal postnatal development, as the primary (woven) bone of the infant gave way to the secondary bone of the growing child, the calcium content of the mineral phase increased in direct proportion to phosphorus (phosphate) but inversely in relation to sulfur. In the congenital bone disorder, osteogenesis imperfecta, the calcium and the sulfur content of the poorly formed bone was abnormal and corresponded to that of a much younger, such as embryonic, age. Thus, in osteogenesis imperfecta there was chemical as well as microscopic evidence of a delay in bone maturation. A systematic study of this and other disorders of bone and cartilage is now being undertaken with the microprobe.

Chondrocalcinosis — There has been recent interest in regard to calcium pyrophosphate deposition in joint disease. A sensitive method, capable of detecting as little as 5 micrograms of pyrophosphate, has been developed by Dr. J. Umberger and applied to the analysis of cartilage, meniscus, and joint fluids in collaborative studies with Dr. R. L. Patterson, Jr. Forty specimens of tissue material removed surgically from 22 shoulders and 18 knees have been examined for pyrophosphate. Eleven of the specimens contained pyrophosphate in readily detectable amounts and of these all except one were from the shoulder.

Degenerative Joint Disease — The diseases of the musculo-skeletal system are still but poorly understood and, in no small measure, this stems from our as yet limited comprehension of the anatomy and physiology of these tissues. This relationship is clearly seen in the pathology of degenerative joint disease which can only be understood in the light of the fine structure of the articular cartilage and the configuration of these particular joints which almost universally undergo degenerative changes. In older people the knee is almost always arthritic, the ankle joint almost never. Some of Dr. Bullough's findings on the collagen structure of articular cartilage have already been published and these studies are continuing. Apart from the collagen component of cartilage, the other important constituents are the mucopolysaccharides which, because of their water-binding properties, provide for the stiffness of the cartilage. When they are not present in adequate amounts then the cartilage is soft and more liable to damage. The mucopolysaccharides are manufactured by the cartilage cells (chondrocytes) and a study is now underway to investigate the metabolic activity of these cells.

A parallel study on the normal pattern of

degeneration in the knee joint is also being undertaken along the lines of previous studies on the elbow and hip.

Alkaline Phosphatases — During the year the immunology laboratory continued with an investigation of alkaline phosphatases from human organs. Alkaline phosphatases are enzymes found in many tissues such as intestine, growing bone, placental tissues, liver, kidney and many bone tumors. These enzymes are also present in the serum and urine. Alkaline phosphatase from these different sources differ in many respects including electrophoretic mobility and immunological properties. At present we can place the alkaline phosphatases in three distinct immunological groups:

1. alkaline phosphatase of liver, bone, and spleen. These enzymes consist primarily of a single electrophoretic and antigenic component, and can as yet not be differentiated immunologically.
2. Intestine; here again we are dealing with a relatively pure antigen.
3. The third group of antigenically indistinguishable alkaline phosphatases consists of the placental and the chorionic enzymes. Kidney alkaline phosphatase contains two different antigenic components, one of which is as yet undistinguishable from that of liver and the other from the intestinal enzyme.

Since the alkaline phosphatases of serum and urine probably originate in these different organs, it is important to establish the tissue of origin when serum alkaline phosphatase increases above the normal levels. This could be done if antisera were sufficiently specific to distinguish among the different alkaline phosphatases.

Presently our laboratory is engaged in purifying and concentrating alkaline phosphatases from different organs so that they can be used for the immunization of

rabbits. This may ultimately yield antisera that will be specific for every organ alkaline phosphatase. As we mentioned earlier, kidney contains several alkaline phosphatases, one of which is antigenically related to the liver and bone, the other to the intestine. Since kidney contains two anatomic regions, the cortex and the medulla, which differ in cellular elements, it may be argued that the two alkaline phosphatases are produced in different parts of the kidney and that a tumor derived from one of these parts would produce only one alkaline phosphatase. We had occasion to analyze the alkaline phosphatase of three carcinomas of the kidneys that had metastasized to the bone. In each instance the alkaline phosphatase of the tumor consisted of one electrophoretic component, and this component was antigenically indistinguishable from that of bone or liver (Fig. 4).

LABORATORY FOR TRANSPLANTATION IMMUNOLOGY

Eugene M. Lance, M.D., Ph.D.

The activities of this laboratory are directed towards the solution of problems in orthopaedic surgery which have an immunological basis or require immunological manipulations.

Tissue and Organ Transplantation — Tissue and organ transplantation have become within the past decade, a clinical reality with respect to the substitution of diseased vital organs by healthy organs from human donors. The technical problems attending these transplantations have been largely resolved and the immunological barrier has been overcome. However, the methods used to suppress the immune response to the organ transplants entails a risk which, at

present, does not justify their applications to other than life threatening situations. As such, elective operations such as might be germane to the field of orthopaedic surgery cannot presently be considered. Because of these limitations our activities have been largely directed to a search for safer and surer means of immunosuppression. To this end our researches from 1966-1968 were focused on the development and application of a new immunosuppressive agent, antilymphocyte serum. This work was carried out in the laboratories of Sir Peter Medawar at The National Institutes for Medical Research, Mill Hill, London. In this environment it was possible not only to show that antilymphocyte serum was a uniquely potent and safe immunosuppressive agent which could, when administered repetitively, indefinitely prolong the survival of homografts across wide immunological barriers (Fig. 5) but also for me to acquire a thorough background in the subject of Immunology. Despite the dramatic success of antilymphocyte serum when administered chronically, yet there are a variety of reasons to wish to avoid, if possible, chronic immunosuppression. This feature has led us to search for means to produce a state of immunological tolerance. Immunological tolerance is the central goal of all those interested in transplantation for it is an induced state of nonreactivity whereby the tissue recipient regards the transplanted material in the way he regards his own tissues and in which continued immunosuppression is no longer necessary. We have been able to achieve this goal for small mammals and are currently exploring the possibility of its achievement in large mammals and man.

In an orthopaedic context transplantation means the substitution of diseased joints or limbs by those from healthy donors. We have recently embarked upon a program of

hind limb transplantation in dogs which we hope will provide us with the background information to one day make this a feasible approach for man. These studies are being carried out with the collaboration of Dr. Allan Inglis from The Hospital for Special Surgery and Dr. Frank Vieth, a surgeon distinguished for his work in lung transplantation at Montefiore Hospital.

Our interest in transplantation, in general, has prompted us to establish a close working liaison with our colleagues at New York Hospital, Drs. Walton Lillehei and Albert Rubin. Several joint projects are currently under way relating to the promotion of renal and heart transplants in man.

Autoimmune Diseases — Among the most crippling of disorders that orthopaedic surgeons and rheumatologists are called upon to treat belong to the category of rheumatoid arthritis which is believed by many to be an autoimmune disease. This implies that the immunologic apparatus of the afflicted patient responds to his own tissue elements as if they were foreign. One of the obstacles to furthering our understanding of the pathogenesis of this condition has been the lack of an adequate experimental model. Recently, in collaboration with Drs. Mellors and Korngold, we have evolved a model of autoimmune arthritis in the rabbit which has many of the features of rheumatoid arthritis and which we believe further study will show to be an apt analogue for this group of human disorders. This has been a very exciting development for it means that we have at last at our disposal a tool to study not only the development of this condition, but also to learn how to modify and hopefully even cure such animals.

The requirements for progress in the

above mentioned areas demand a far greater understanding of the normal immune system itself. To this end a large part of our activities have been devoted to the study of the natural history of the cell populations involved in the immune response. At the end of 1968 Miss Marian Zatz joined our laboratory as a Ph.D. candidate. Her role has been to investigate and quantitate the diverse populations of lymphocytes and correlate this knowledge with their functional capabilities. Dr. Ronald Gillette, who joined us in 1969, is focusing chiefly upon the macrophage and its role in immune responses.

DIVISION OF ULTRASTRUCTURAL BIOCHEMISTRY

A. S. Posner, Ph.D., J. L. Granda, M.D., Ph.D., J. D. Termine, Ph.D., E. S. Handler, Ph.D., P. J. Tannenbaum, D.D.S., J. C. Weber, D.D.S., R. A. Harper, M.S.

This division is involved in the investigation of the chemical and physical nature of bone and connective tissue on the molecular level. An understanding of the arrangement of the constituent atoms of such materials as bone and cartilage will lead the way to the understanding and treatment of diseases of these tissues.

A recent important finding of this laboratory is the presence of a second mineral phase, an amorphous calcium phosphate, in bone mineral (Fig. 6). This phase plus the earlier known hydroxyapatite crystalline phase make up the mineral portion of bone. To better characterize this amorphous material a detailed x-ray diffraction study has begun on the 3-dimensional arrangement of the Ca, P and O atoms in the crystalline compound, $\text{Ca}_3(\text{PO}_4)_2$. The latter resembles the



Therapist and young patient in a cerebaral clinic; a rehabilitation procedure.

amorphous material chemically, if not structurally, since the amorphous material is a tricalcium phosphate too.

Much of the effort of the crystallographic group has been devoted this year to characterizing this amorphous form. Electron microscopy and special x-ray scattering techniques (e.g., small angle x-ray scattering) have demonstrated that the amorphous material (both *in vitro* and *in vivo*) differs markedly in particle shape and size from the crystalline apatite. This is important because the biochemical role of particulate material of such microscopic size is highly dependent upon size and shape.

In synthetic systems the amorphous phase will transform spontaneously into crystals of apatite unless stabilized. A series of experiments on synthetic systems were performed in order to understand the stabilization of this phase in bone. Studied was the effect of a number of solution factors (pH, ionic strength, concentration,

temperature, solution, additives, etc.) on the formation, stabilization and the rate of transformation of the amorphous calcium phosphate. These experiments have led to a clearer picture of the way in which bone mineral is deposited in the body when this tissue is formed.

Studies were made on the crystallographic nature of normal and diseased bone by means of x-ray diffraction and infrared absorption spectrophotometry (Fig. 7). As one would expect, bone mineral changes to a more stable system with age. Rachitic bone mineral (Vitamin D deficient; Ca, or P deficient) appears immature chemically and thus is probably more biochemically reactive than normal bone. When bone mineral is resorbed by experimental osteoporosis the balance between the two mineral phases is not lost, thus the resorption doesn't discriminate between them even though the

process uses up smaller crystals before resorbing the larger ones. The infrared technique was also useful in studying the effect of putting carbonate ions in the structure of synthetic hydroxyapatite. The results were applicable to well crystallized synthetic systems. Further work is planned on bone crystals.

Closely related to bone studies is the chemistry of cartilage and the nature of its disease process. A series of studies assayed the role of hydrolytic enzymes in normal and pathological cartilage. It was shown that gold salts inhibited the action of these cartilage-destroying enzymes, thus accounting for the usefulness of such compounds in the control of rheumatoid arthritis. Further work on cartilage from patients with rheumatoid arthritis suggested that an enzyme assay could be used to evaluate the success of a synovectomy. In line with these studies, the membrane analysis of rabbit polymorphonuclear leukocytes was continued this year. The nature of the protein of this membrane was characterized by amino acid analysis, ultracentrifugation, disc electrophoresis and gel filtration.

Finally it should be noted that all senior staff members of this group are active in teaching and supervising the research work of medical students, graduate students, Fellows and Residents. Many of the projects mentioned above were participated in by such trainees. An interesting application to teaching developed by a member of this laboratory in conjunction with the Anatomy Department, Cornell University Medical College, was a computer assisted instruction system for the teaching of Gross Anatomy. This points up the close tie between research and teaching always in evidence in this laboratory.

BIOCHEMISTRY LABORATORY

Hilliard E. Firschein, Ph.D.

Since the activation of this laboratory in 1964, our progress may be listed according to the following steps:

1. Development of methods
2. Studies of the rate of collagen synthesis in bone
3. Studies of the rate of collagen resorption in bone
4. Comparative studies of collagen and mineral dynamics in bone.

The classical precursor-product concept has been utilized for the study of collagen dynamics in bone. It has been shown that the only substance that contains appreciable amounts of hydroxyproline in bone is collagen and the precursor of hydroxyproline is actually proline. Therefore, one may study collagen dynamics by injecting radioactive proline into animals, and studying its rate of conversion into hydroxyproline. The original procedures for the isolation of hydroxyproline from bone and the measurement of its specific activity was reported in a paper by H. E. Firschein and J. P. Shill, *Anal. Biochem.* 14:296, 1966. As experience was gained in the application of these methods to practical situations, various modifications have been made and these have been published in a number of other papers.

Using these techniques if one studies the rate at which proline is converted into hydroxyproline over short intervals of time, one can actually measure the rate at which collagen is synthesized in various bones under different metabolic states. The shape and slope of the curves thus obtained varies from one kind of bone to another and is a direct reflection of the metabolic activity in that bone. If measurements are carried out over a longer period of time, one can actually measure the rate at which collagen

resorption is carried out. These studies have shown that both the rate and mechanism of collagen resorption and bone remodelling varies in different bones.

As a logical consequence of these studies, methods were subsequently developed which permit one to carry out *simultaneous* studies of both the collagen and mineral phases of bone. These technique have been utilized to study the rate and mechanism of fracture healing. It was found that starting about two days after fracture, there was a large increase in the rate of collagen synthesis at the fracture site, representing the actual formation of the callus, while the rate of calcification of the callus was shown to lag behind (Fig. 8).

In other experiments we have compared the rates at which collagen and mineral resorption occur. Under normal conditions, these rates were shown to be identical. These findings are in full accord with our current ideas concerning bone remodelling, but this is the first time that concrete chemical and radioisotope evidence has been presented on this point. However, if rats are denied access to adequate amounts of dietary phosphate, the rate of resorption of the mineral is markedly increased without any concomitant effect upon the rate of collagen resorption. Thus, under conditions of dietary deprivation of phosphate the rates of collagen and mineral resorption are not the same, resulting in a decrease in the strength of the bone. These findings have extremely important implications for metabolic bone disease, which must be explored further.



Cerebral clinic conference.



Experts in plaster room apply body cast to patient.

LABORATORY FOR STUDY OF BONE METABOLISM

Paul D. Saville, M.D.

Over the past three years the Bone Metabolism Laboratory has been developed on the fifth floor of the Research Building in conjunction with the Metabolic Bone Disease Clinic on the one hand and the Laboratory of Comparative Orthopedics on the other.

Animal Studies — Studies of animal bones have the advantage of permitting direct examination of individual bones and we have taken the opportunity to show that bone mass and density can be measured accurately. It was found that the ash content of any dog bone can be predicted from its volume; that there is a standard of bone density in these animals; and that a diet containing the calcium that humans normally consume leads to steady loss of minerals from the spine and later from the long bones.

Interestingly, when histological specimens were examined without knowledge of the diet it proved impossible to categorize them into the proper dietary groups. Measurements were made of bone volume from undecalcified as well as decalcified histologic sections. The data from the decalcified samples bore no relation

whatever to previous density determinations of whole bone while the undecalcified samples were only slightly better showing the limitations of morphology in demineralizing bone disease.

Simultaneous balance studies and calcium kinetics have been performed on these dogs to clarify the mechanisms involved in mineral loss under these conditions. The dogs had veterinarian supervised meals seven days a week. It was found that, unlike man, these animals secrete huge amounts of calcium into the intestine which is lost in the stools while they lose almost none in the urine. This opens up a little explored avenue of interest. Do some men lose bone mineral through the intestine and so demineralize? There is evidence that acromegalics do.

Human Studies — The laboratory has been organized to measure or calculate the renal tubular reabsorption of phosphate, the urinary calcium as a function of creatinine excretion, phosphorus clearance, creatinine clearance, and serum values of these substances. These measurements have been applied to patients following renal homographs and we have analyzed the factors leading to postoperative

hypercalcemia, renal function impairment and the effect of aluminum gels on these functions. It appears that preoperative vitamin D is dangerous for these patients; postoperative hypercalcemia can be predicted preoperatively; and aluminum phosphate should be substituted for hydroxide in order to avoid a newly recognized syndrome — phosphate deprivation.

Calcium kinetics have been measured in a large series of osteoporotics and these measurements have been repeated in many patients following vitamin D therapy. The success of this study has resulted from the use of the whole body γ -scintillation counter. Thus, all work was performed on outpatients with the many advantages to which this kind of investigation leads.

Computer Facilities — With the data explosion on the fifth floor and the more sophisticated statistical techniques now available, it became urgent to develop new methods for handling data. The first acquisition was of an Olivetti Underwood Programmable Calculator which soon began to be used all day long, not only by everyone on the fifth floor, but by other investigators throughout the Research Building. The availability of this little machine has proved to be an effective way of training investigators in the use of biostatistics.



Long hours of study are part of the day's routine for research worker

A more sophisticated effort was the introduction of a console linked by telephone cable to a time-sharing computer. IBM developed a program that enabled us to store clinical data on disks downtown and retrieve, correct, and update these at will. Clinical observations from the Metabolic Bone Disease Clinic as well as the Knee Clinic and more recently Rheumatic Diseases and Hip Clinic material were prepared for this machine. There is now a full time operator who can modify the programs for particular use. In order to feed precise clinical data to a computer, it is necessary more carefully to examine patients and to record accurately the information gathered. Thus, there has been improvement in patient care as result of this program even before any of the data has been analyzed.

Analysis of Metabolic Bone data has shown a significant correlation between the serum alkaline phosphatase and the accretion rate calculated from strontium kinetics. The accretion and pool increase up to 500% with vitamin D treatment of osteoporosis.

We have also found that women with symptomatic osteoporosis had been born in the winter, more particularly in the months of March, April and May, suggesting a permanent effect of adverse biological influences in the neonatal period.

LABORATORY FOR COMPARATIVE ORTHOPAEDICS

Sten-Erik Olsson, V.M.D., M.D.

During 1968 the major problems studied in the Laboratory for Comparative Orthopaedics concerned the etiology, diagnosis and treatment of congenital dislocation of the hip. Other studies involved Legg Perthes disease, the development of periarticular osteophytes following ligamentous lesions in the knee joint, and skeletal changes due to nutritionally induced hyperparathyroidism. A presentation of work performed in this laboratory over the last couple of years has been published in a Symposium on Comparative Orthopaedics in *Clinical Orthopaedics and Related Research*, volume 62, 1969. In association with Dr. Carl Beling at the Hormone Laboratory of The New York Hospital Department of Obstetrics and Gynecology, Dr. PeO Gustafsson has continued our studies of congenital dislocation of the hip. Pups of beagles were injected with 200 ug estradiol benzoate per kg body weight five times weekly during the first 6 weeks of life. The hip joints of the pups were particularly studied. At 6 weeks of age hip joint laxity was present in all the injected pups and the femoral heads were smaller than those of the controls. Radiographic studies showed earlier development of ossification centers in the femoral heads. The over all weight gain of the treated pups were normal. Pregnant beagle bitches were injected with estradiol benzoate during the last 3 weeks of gestation. Intramuscular injection of more than 90 ug estradiol benzoate per kg body weight resulted in intrauterine fetal death.

Lower doses caused developmental changes, but did not affect the fetal mortality. Changes in the hip joints were observed in the offspring at 6 weeks of age, joint laxity was present and the femoral heads were smaller than those of the controls. The weight gain was lower than normal. The results indicate that administration of estradiol to bitches during pregnancy causes changes in their pups similar to those observed when estradiol is injected directly to pups during the first 6 weeks of life.

EVELYN SHARP LABORATORY FOR NUCLEAR MEDICINE

Göran C. H. Bauer, M.D.

During 1968 a total of 923 procedures were performed in 409 patients with the majority of the patients suffering from osteoarthritis, bone tumor, infection, Paget's disease and necrosis of bone. In most of these patients skeletal scintimetry was performed during a two week period following intravenous injection of ^{85}Sr . The objective of these studies was twofold, diagnostic and investigative. Our findings in the arthropathies of the hip and of the knee provide an example of what we try to achieve.

Earlier measurements of ^{47}Ca and ^{85}Sr uptake in the spine and hip in man have demonstrated that osteoarthritis is associated with an increased rate of bone tissue turnover. We now attempt to correlate the uptake of ^{85}Sr , as influenced by osteoarthritis, to radiologically visible anatomic details. We have found that the uptake of ^{85}Sr is higher than normal in those areas of the osteoarthritis knee where osteosclerosis is a predominant radiographic feature; medially in genu varum and laterally in genu valgum. We have also found high localized uptake of ^{85}Sr in the hip or in the knee in patients who have had pain in these joints but absence of

radiographic signs of disease. Some of these patients have subsequently been identified as suffering from necrosis of bone (Fig. 9). On this basis a prospective study of non-traumatic necrosis of the head of femur was started by Dr. Robert Cameron when he was a research fellow here, followed up during his residency. In all but one of 48 affected hips he found abnormally high scintimetry values. In several cases a diagnosis of impending necrosis of the head of femur was made with the aid of ^{85}Sr scintimetry prior to the appearance of any roentgenographic abnormality, and in one case the diagnosis was made even prior to clinical symptoms. In a parallel study of the knee joint, Dr. Ahlbäck and Dr. Bohne found that spontaneous onset of severe knee pain in the aged may be due to osteonecrosis. A radiolucent lesion in the medial femoral condyle was observed in 40 knees in 39 patients over age 60. Twelve knees were radiographically normal for at least two months following onset of pain. Seven knees proceeded to osteoarthritis, whereas others became rather asymptomatic. ^{85}Sr scintimetry of symptomatic knees showed exceedingly high values. The condition was identified as osteonecrosis, spontaneous in origin in the majority of the patients. These

findings in osteonecrosis of the head of femur or the knee joint may well have both diagnostic and therapeutic implications. If the diagnosis of this condition can be made by tracer studies before gross (roentgenographically visible structural changes have occurred, and if these findings indicate repair of bone tissue, perhaps a period of non-weightbearing may permit sufficient restitution of subchondral bone to obviate further collapse and progress of the disease as we now know it.

Finally, Dr. William Crutchlow has analyzed ^{85}Sr scintimetry patterns observed in 195 hips in 116 patients; the majority of these hips were diagnosed as osteoarthritis or osteonecrosis with and without secondary osteoarthritis. The studies suggested that ^{85}Sr scintimetry may be useful in demonstrating early osteoarthritis of the hip prior to its radiographic appearance, and that some cases of idiopathic osteoarthritis may indeed be due to a prior episode of spontaneous osteonecrosis (Fig. 10).

BIOENGINEERING LABORATORY **Harlan C. Amstutz, M.D.**

The primary goal of this laboratory is the development of total joint replacements for arthritic conditions where both sides of the joint have been destroyed by injury, disease or failure of normal development. Our efforts in 1968 were mainly directed toward the hip joint. The program included evaluation of materials from the standpoint of friction and wear, toxicology and methods of prosthetic fixation to bone.

Friction and Wear Analysis — The materials used for artificial joints must closely approximate the normal joint's physical and mechanical properties. In addition the materials problem of total joint replacement is much more complex than with conventional reconstructive procedures because of the addition of bearing surfaces which undeniably will wear. A wide variety

of alloys, polymers, ceramics and composite materials have been tested to determine their wear resistance and friction under simulated physiological conditions. Polymers offer significant advantages over alloys as prospective material because their elasticity is closer to the cartilage bone composite. Of the 15 polymers tested Poly-imide and high-density polyethylene have shown the most potential. The most serious disadvantage seems to be degradation within the body, and this is the subject of current studies.

Ceramics have been largely ignored to date because of their brittleness. However with new technology a vastly improved material can be made. A new ceramic material (similar to that used for space ship nose cones). Pyrolytic carbon, offers excellent wear resistance and elastic properties similar to bone.

Of the implant alloy materials presently used, the cobalt based alloys are the only materials acceptable as bearings. Alteration of the elemental compositions hold promise in improving the crystal structure of the bearing properties. The quality of the surface finish and configuration and relation to lubrication are the subject of current tests. Working in the effort special credit is due Dr. Robert Johnson, Chief of the Lubrication Branch of the Lewis NASA Research Center, Cleveland, Ohio, and Mr. Martin Rubinfeld who joined our staff as Research Assistant in November.

Hip Simulator — An apparatus has been designed and developed to test a full-scale prototype total hip joint. Development and testing of this apparatus is under the supervision of Professor Vittorio Castelli and Glen Rightmire of Columbia University, Department of Mechanical Engineering. Models in the most desirable materials are to be tested.

Young patient's condition is clearly marked — for special handling.



Lubrication Analysis — The ultimate purpose of this aspect of our research is to evaluate the ability of synovial fluid to lubricate artificial joints and to develop a pseudo-synovial fluid with the consistent properties for additional materials evaluation. This is the subject of the masters thesis of Thomas Gruen, a bioengineering student. Initial studies have been directed to determine the pH viscosity at different shear rates and the hyaluronic acid concentration of synovial fluid from persons with different arthritic conditions. Evaluation of the effects of refrigeration and freezing have been carried out to determine the proper methods of handling and storage. Synovial fluid and plasma have compared favorably as a lubricant for steel and polyethylene. However, the lubricity of synovial fluid degrades rapidly when used in the test apparatus despite no change in concentration suggesting a physical or chemical change in the hyaluronic acid molecule.

Materials Biocompatibility — Materials which are now used as implant materials in general orthopaedic practice and those which have shown promise on mechanical and physical tests have been implanted in over 200 rabbits to evaluate tissue compatibility. Completed studies will include histological analysis from one week to two years. The highly promising polymer and ceramic materials previously mentioned evoked minimal tissue reaction, but so far efforts to vary the composition of the cobalt-based alloy to improve its friction and wear properties has evoked an unfavorable toxicological response at the prosthetic tissue interface. Dr. Alfredo Czerniecki, assisted by Tibo van der Does, has participated in this study.

Development and Evaluation of "Adhesives" — The prostheses for effective long-term use must be rigidly fixed to bone. Evaluation of Methylmethacrylate as a mechanical "adhesive" has been

investigated in 24 dogs by Dr. Louis Lurie. Where rigid fixation was achieved and maintained a good clinical result followed and was achieved without undue toxicological response. When the prostheses became loose through technical or other factors, a poor clinical result was associated with a remarkable degree of new bone formation. These laboratory adhesive studies have proved valuable in developing techniques for clinical application. Other "adhesives" including several epoxy systems have been tried but none has proved to achieve mechanical fixation as effectively as the methylmethacrylate.

Tendon Replacements — Success of joint replacement of the shoulder and perhaps in the knee may ultimately depend on synthetic materials developed to bridge muscles and tendons to the prostheses. Evaluation of various synthetic meshes and velours in animals is the study of Dr. Eric David. A technique has been developed to evaluate tendo Achilles and patellar ligament replacement.

Evaluation of Orthopaedic Implants — Dr. Jorge Pavon and Allan Weinstein (Ph.D. Metallurgical Candidate from Polytechnic Institute of Brooklyn) have been evaluating all orthopaedic implants consecutively removed at our hospital for the period March, 1967 to February, 1969. The purpose of this study is to determine causes of removal and correlate implant failure with materials and design by studying the case histories and performing detailed metallurgical analysis.

Göran, C. H., Bauer, Md.
Director of Research

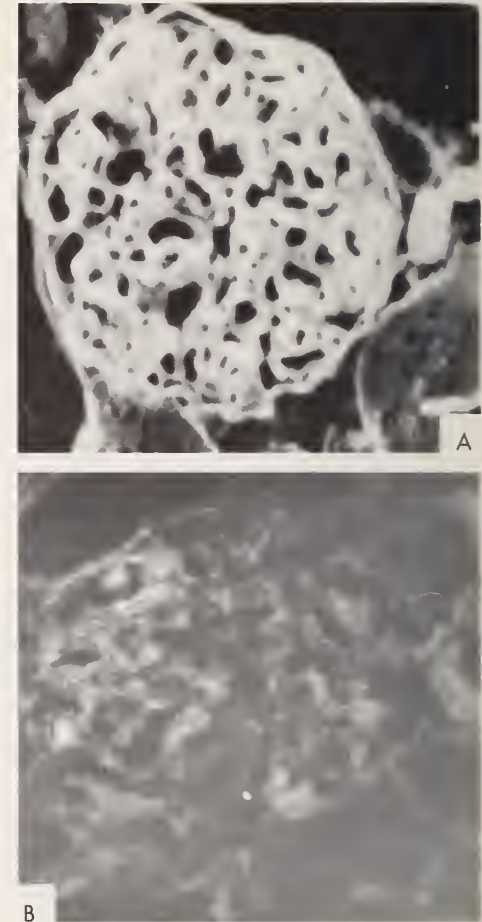


FIG. 1

Prevention by collagenase of fluorescence of antibody to collagen. (A) Normal rat kidney section treated with collagenase before anti-kidney serum was applied. Fluorescence has remained bright. (B) Collagenase was used to treat this normal rat kidney section before anticollagen serum. Fluorescence is now almost completely absent.



FIG. 2
Reconstituted collagen from lathyrus rat embryo.

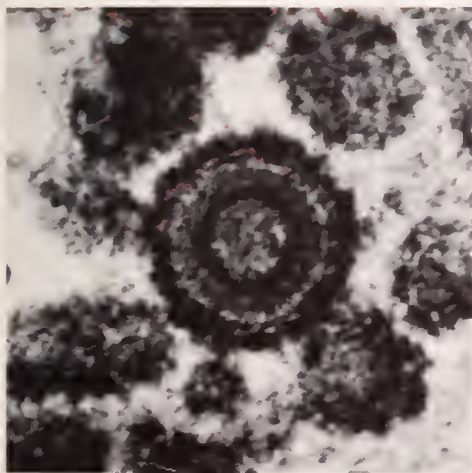


FIG. 3
Spherical virus-like particle in thymus of an NZB mouse. Electron micrograph by Dr. Huang. X300,000.



FIG. 4
Starch gel electrophoresis of alkaline phosphatase separations from (top to bottom) normal kidney, renal carcinoma in bone, and primary osteogenic sarcoma.

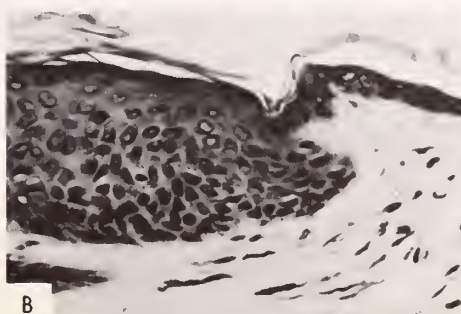


FIG. 5

Illustrating the potency of antilymphocytic serum in overcoming the rejection of transplants. Human skin is shown two months after transplantation to a mouse which has been treated with twice weekly injections of $\frac{1}{4}$ ml of antilymphocytic serum. There is no evidence of rejection even across this extremely wide antigenic barrier. (b) Higher magnification of (a). Human skin transplant to left in these microphotographs.

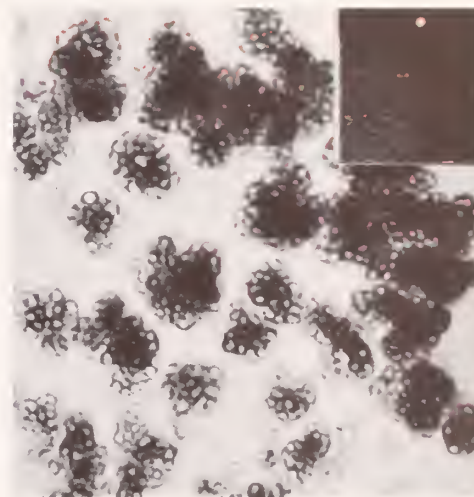


FIG. 6

Electron micrograph of synthetic amorphous calcium phosphate similar to the new phase found in bone mineral. The magnification is shown by bracket in lower left (0.1u is equivalent to about 0.000004 of an inch). The photo shows clusters of the individual hollow spheres each of which is about 0.000001 of an inch in diameter. The inset (upper right) shows a shadow casting (at a slightly different magnification) of one of the individual spheres.

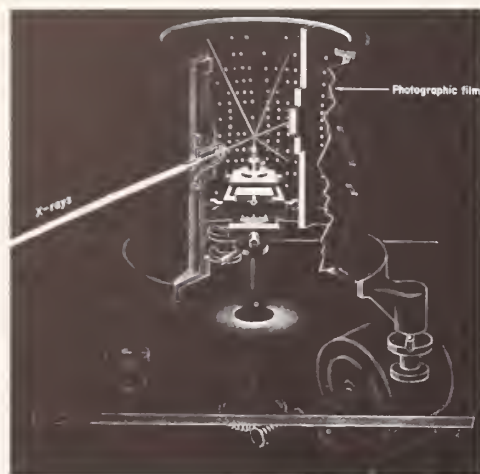


FIG. 7

A diagrammatic view of an x-ray diffraction apparatus. The crystal under study, mounted on top of the goniometer at the center of the apparatus, is irradiated with x-rays of a single wavelength. The diffracted beam from the crystal produces spots on the film which is fixed cylindrically around the crystal. The diffraction pattern on the film can be related quantitatively to the kind of atoms comprising the crystal structure and the 3-dimensional arrangement of these atoms. Such structure knowledge is useful in determining properties of bone crystals.

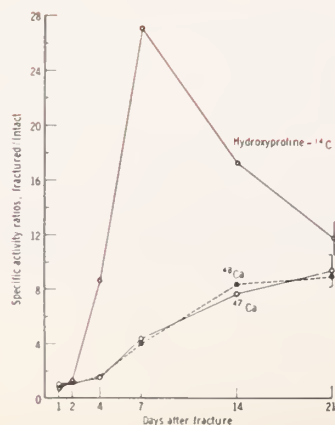


FIG. 8

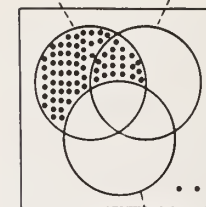
Comparison of mineral to collagen tracers for measurement of bone tissue repair. Calcium and proline tracers were injected simultaneously in rats at intervals up to twenty-one days after fracture of one tibia. Assays were done twenty-four hours after each injection. The figure shows the ratio of the specific activity of the fractured tibia to that of the intact tibia as a function of the age of the fracture. The vertical bars twenty-one days after fracture indicate the SD and show that, at this time, there was no significant difference between the values for hydroxyproline - ^{14}C , ^{47}Ca , or ^{48}Ca . In another experiment it was shown that once a steady state had been reached as regards collagen and mineral formation the tracer specific activity ratio of collagen to mineral did not change.



FIG. 9

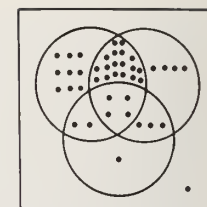
A 46-year-old woman developed severe right hip pain six weeks following renal transplantation. Physical examination, radiographs and tomography were normal. However, ^{85}Sr scintimetry (A) showed a characteristic pattern of osteonecrosis of the femoral head. Repeat tomography (B) seven months post transplant showed the classic crescent sign of osteonecrosis.

$A/F > 0.70$ $S/M > 1.25$

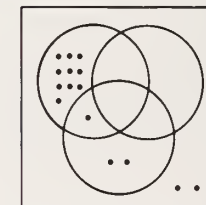


NORMAL

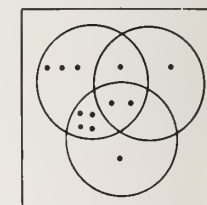
$CA > 30$



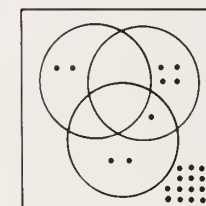
SUPERIOR OSTEOARTHRITIS



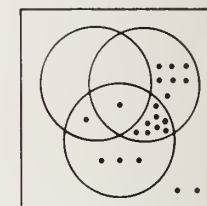
MEDIAL OSTEOARTHRITIS



MIXED OSTEOARTHRITIS



OSTEONECROSIS



OSTEONECROSIS WITH SECONDARY OSTEOARTHRITIS

FIG. 10

A series of Venn diagrams illustrating patterns observed in ^{85}Sr scintimetry of the hip. Sets are defined as having acetabular/femoral head ratio over 0.70, superior/medial ratio over 1.25 and corrected activity over 30 counts per 10 seconds. Normal distribution is clearly distinct from abnormal, and most abnormal groups have characteristic, occasionally diagnostic, patterns.

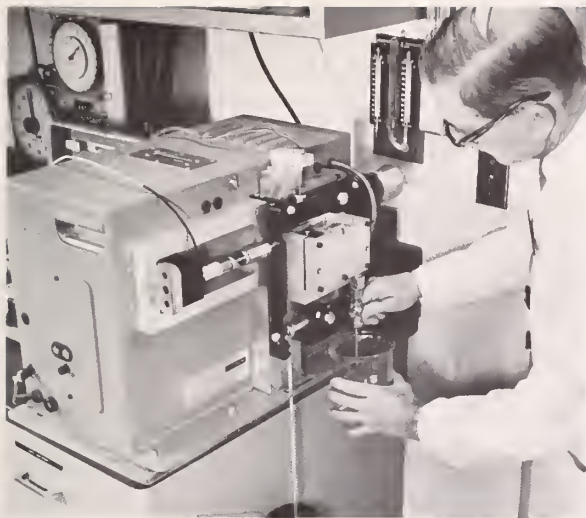
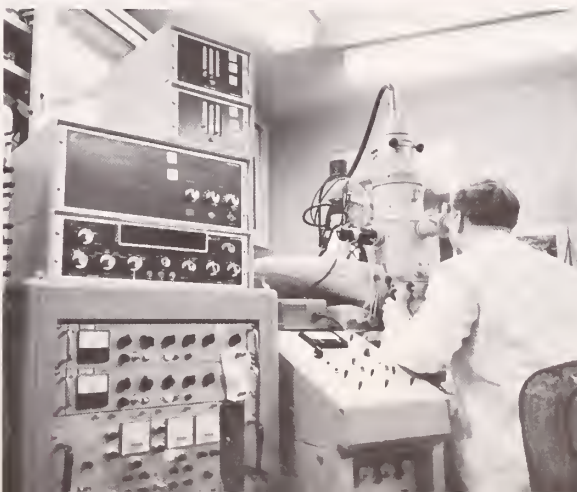
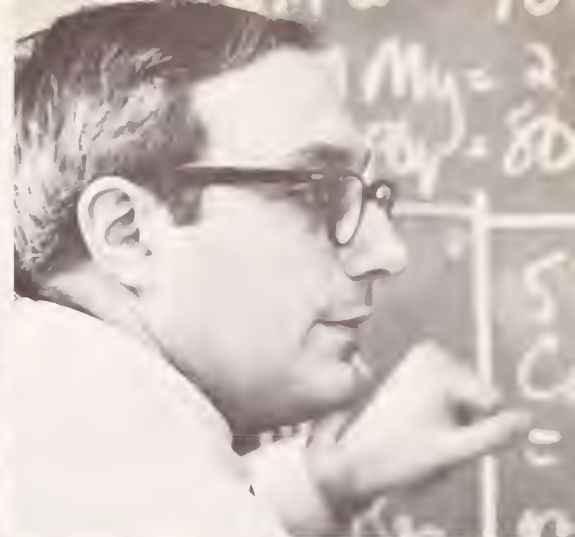


FIG. 11

The basic Friction and Wear test machine. Load cell at left senses friction force and transmits signal to strip chart recorder. Transducer on top senses wear during the 350,000 cycle test.



Complicated instruments and scientific know-how are merged in the research effort.



Report of the Administrative Vice President

Even compared with the activity in our Hospital over the past few years, 1968 — our 105th year of public service — was a banner year. We had 62,098 patient days, 593 more than in 1967. Occupancy rose from 82.6% in 1967 to 83.4% in 1968. Our average daily census increased by 1 to 170, while our average length of stay remained at 20 days. March, 1968 was our busiest month since March of 1965; we had 5,561 days of patient care, 87.9% occupancy and a daily average census of 179. A few months later, in July, we were so busy that for two days we had a fifth patient in a four-bedded unit; one week we had three additional patients in three four-bedded units, and on July 24th we had no vacant beds at all in the Hospital, except for a few cribs on the Pediatric floor.

At the same time, our Out-patient visits continued to decline — from 37,253 in 1967 to 35,174 — a decrease of 2,079.

In line with the upward surge in our In-patient activities, we are happy to report that 1968 saw a very marked improvement in our Hospital operating income. For the past several years, even without taking depreciation into account, we had been operating at a substantial loss (made up by gifts and income from investments and gifts). This year, however, our Hospital operations showed an operating profit, without depreciation, of \$133,417, compared with a 1967 loss of \$383,160. This change was brought about, despite sharply rising costs, chiefly by improvement in our reimbursement rates from Blue Cross, Medicare, Medicaid and the other third parties who pay for over 85% of the In-patient care furnished by the Hospital.

The turnabout in our finances generated additional operating cash, which in turn has permitted us to adopt for the first time a partial funding of depreciation. During the year we set aside \$260,000, derived from operations, in a depreciation fund, which will be available when needed to replace equipment and other capital assets as our plant grows older. In addition, \$213,389 in excess cash from operations was transferred to the investment fund. By contrast, a year earlier, before depreciation was being funded, we were forced to withdraw \$300,000 from the investment fund to meet current operating expenses.

Two other factors contributed toward an improvement in our cash flow; a further reduction in our Patients' Accounts Receivable and more current reimbursement from Blue Cross and Medicare.

Patients' Accounts Receivable — \$854,828 at the end of 1967 — were driven down to \$763,572 at the end of 1968, even though our charges to patients were at a higher level. At the end of 1968 we had about 42 days charges outstanding, compared with 56 days in 1967 and 72 days in 1966.

The Blue Cross contribution to our financial betterment was a new reimbursement formula calculated to pay promptly on the basis of current costs. In former years it was necessary to wait for the completion of the Blue Cross annual audit before new rates were put into effect. Under the new system, which requires much more sophisticated cost analysis and budgeting than ever before, we are permitted to furnish Blue Cross with the required information on a timely basis, thereby enabling them to keep reimbursement up-to-date. Similarly, with Medicare we were among the first hospitals in the Metropolitan area to be approved for PIP (period interim payments), under which we receive a fixed

weekly payment for current services, subject, of course, to later adjustment. For our private Out-patients we have instituted payment by credit card, which provides two improvements: convenience for our patients and a reduction in costly billing and collection expenses in our business offices.

During the year our research programs, which are supported by government grants and the income from private trusts, continued at a break-even point, exclusive of depreciation, even though there was a general tightening up on available government funds.

Non-operating income also improved in 1968, with an increase in the yield of our investments and in unrestricted gifts to the Society. The continuation of a high level of non-operating income is extremely important to provide for years when our financial operations may not be as successful as in 1968 and as a source of funds for improvement and expansion of our facilities.

Personnel Relations

1968 was a most rewarding year, not only for the Personnel Department itself, but also in that intangible area known as personnel relations. From a managerial point of view we are pinning high hopes on a project undertaken in cooperation with a management consulting firm, to review all the jobs performed at HSS. By updating job descriptions we can not only better correlate all the various employee responsibilities but also establish equitable and competitive wage scales for all employees. The study will continue into 1969 as we develop a performance appraisal system to identify and reward individual contributions to the Hospital. The information we gather in the course of the study about our needs and organization should prove an invaluable tool



Apprehensive patient awaits examination in amputee clinic.

for management as we plan for the Hospital's inevitable growth and development.

In July we increased our health benefits for employees, to include not only free Blue Cross insurance but free Blue Shield and major medical protection as well, an important addition to the total benefit package we offer our staff.

Our Employee Suggestion Box paid off with an excellent recommendation — that some of our employees would like a class in Spanish in order to better serve the increasingly large number of people we treat who cannot speak or understand English. The result? Forty doctors, nurses, clerks and technicians are regularly attending Spanish classes.

A year ago we began our Grant Scholarship Plan for children of full-time professional staff and certain administrative personnel as designated by the Board.

Scholarships are available only to students at the under-graduate level and are in amounts equal to actual tuition and related fees, up to a maximum of \$1,000 per academic year or its equivalent for a maximum of four years. The first year of the plan produced four successful candidates. This year there were eight.

At the year's end the Director held eleven meetings — lasting from one hour to ninety minutes — with all employees. Material included the tradition of HSS, details of its affiliation with the Center, patient statistics, and its organizational pattern. Slides demonstrated the budgets for 1968 and 1969. A graph showed salary increases since 1963, and a second graph showed the cost of fringe benefits. Employees also received a briefing on long-range plans and the new benefits which have been approved by the Board for 1969. Each of the eleven sessions was followed by a question and answer period.

Nursing

The report on the Nursing Department will be submitted by Miss Smith, our Director of Nursing. However, I want to express my appreciation to her staff for the excellence of cooperation which has constantly been maintained under situations which are sometimes very difficult and trying.

Plant Changes

When we moved up to 70th Street, as we are all fond of remembering, we had the most modern and efficient medical plant in the country. Trying to maintain it that way keeps us busy year in and year out. Last year's activities in that direction included:

The beginning of construction of a research x-ray facility on the fifth floor of the

Research Building. Equipped through support of a National Institute of Health grant, this unit when occupied in 1969 will be a unique adjunct to the nuclear counting equipment located in the adjoining areas.

In the area of safety, a year ago we had tied our internal fire alarm system into the central station. This year we improved it still further by converting the previously separate fire alarm systems that served the Hospital and Research Buildings into one internal system. We also began construction of a fire-door and smoke-detection system that focuses on patient areas and also automatically closes the fire doors on the bridge between buildings.

An extensive program of replacing defective sidewalks was undertaken, with complete replacement of heavy traffic areas around the Hospital.

Lesser, though important, changes were made within the Hospital itself. We converted the little-used hydro-therapy room into a second gymnasium, and refurbished and redecorated both gyms. The main kitchen received a pot-washing unit, and the cafeteria was redecorated and refurbished with new table tops and chairs. The clinic waiting room blossomed forth with walls as bright and cheerful as Springtime, and the conversion of a former waiting room and treatment area on the sixth floor gave us five additional beds.

One of our most urgent needs is housing for Hospital employees. We took a long step forward in this area by purchasing and taking occupancy of the 68 unit Mayfair East apartment house at 310 East 71st Street. At present, 75% of the apartments are available to HSS employees, and we expect the entire building to be Hospital occupied by the Spring of 1970. This will not be a rental minute too soon. We already have 50 people on the waiting list for the building, and another 32 will join the army of the

dispossessed when our leases at Payson House run out in the following Spring.

Finally, doing our bit against air pollution, we upgraded incinerators at the 77th Street apartments and the newly purchased Mayfair East.

Staff Changes

Every year I have the pleasure and the sadness of detailing the staff changes that have taken place since the last report.

Among the pleasant, in both a personal and professional sense, was the election to the Board of Managers of Mrs. Arthur A. Houghton, Jr., Mr. Richard M. Furlaud, and Mr. Thomas Parsons III. (In another form of change, Board Member, Mrs. Anne McDonnell Ford, became Mrs. Deane F. Johnson, but happily for us remains on the roster of our Board).

We are also happy to welcome Dr. Margaret O. Harrison, a British-trained radiologist, as Assistant Director of the Radiology Department.

Six members of our staff retired: Dr. Milton Helpert, Special Consultant; Miss Gwendolyn DuBuque, and the Mesdames Marguerit Strasser, Josephine Sullivan, Anna Cronin, and Carolyn Ochs.

Among new faces your Administrative Vice President was especially happy to welcome was a much needed Assistant Director, Mr. Monroe A. Hovey, replacing Mr. John Baer who resigned to try his hand with a management firm.

Death claimed one of our employees, Mrs. Jackie Mims, of Housekeeping, and four who had retired: Miss Eva Becker, Mr. Ramon Colon, Mrs. Mary Santee, and Mrs. Della Williams.

We particularly regretted the deaths of two of our oldest associates: Dr. Cornelius H. Traegar, whose connection with us began in 1929, and Dr. Roland L. Maier, who came to us as an intern in 1923 and served successively as Associate, Attending and Consulting Surgeon for 43 years.

On the bright side, 102 members of the 15-25 Year Club got together in June for the annual cocktails and dinner, at which 10 employees celebrated their 15th year with us and two, Gwendolyn DuBuque, the Assistant OR Supervisor, and Doris Nichols of Occupational Therapy, received their 25-year pins.

Social Events

Two special events during the year enriched our treasury. The Annual Benefit — held on Tuesday, May 21st, from 7:00 p.m. until Midnight, at the Wildenstein Gallery on East 64th Street, was an exhibition of paintings rich in the heroism of the American past: "How The West Was Won". It won for HSS \$42,970, including receipts from the sale of souvenir journal advertisements and the chance books.

The other fund-raising event of the year was the special birthday party friends of Mrs. Edwin Hilson gave for her. The guests arrived bringing donations to the Hospital as well as best birthday wishes. The cash value of these greetings was \$4,290, and was deeply appreciated by our coffers. Happy Birthday, Mrs. Hilson, and many more of them.

The annual Rebecca Witherell Ride-Around-Manhattan was held Saturday, June 22nd, on one of the Circle Line Boats. Though primarily for the pleasure of patients, it also welcomed Board Members, volunteers and members of the staff. Not least among its pleasurable moments was the thrill of recognizing the handsome

building that stretches from 70th Street to 71st.

Our School of Practical Nursing celebrated Alumnae Day on Tuesday, May 7th, with lunch at the New York Hospital Nurses' Residence; Dr. David Levine was guest speaker and Mr. Lawrence McK. Miller represented the Board.

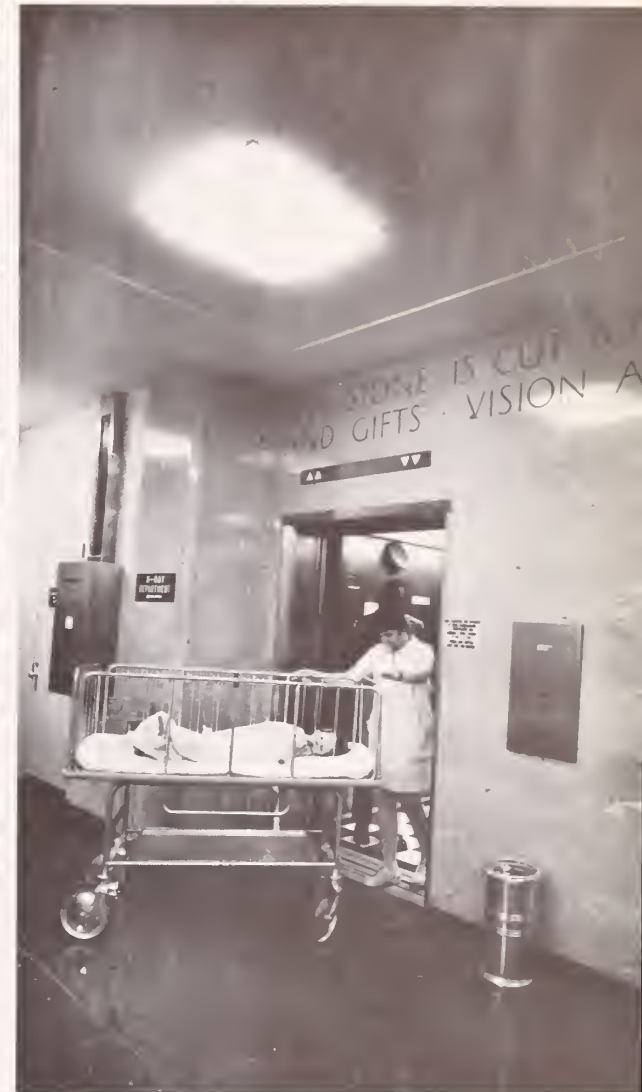
Other Alumni got together for two days of nostalgia and comparing notes on Wednesday and Thursday, November 13th and 14th. Registrants the first day numbered 125 and on Thursday 140. The Hospital provided lunch both days. A Dinner Dance was held at the Essex House on Wednesday night and cocktails concluded the affair Thursday afternoon at 4:30 p.m. Many alumni took the time to congratulate our professional staff on one of the most memorable programs ever given at the Hospital; we received these encomia with pleasure though not surprise — we thought it was memorable too.

Miscellaneous

In recent reports I have had various melodramatic incidents to relate to you — a rather staggering blizzard, a transportation strike, burglary in one of our apartment buildings, the tempermental outburst of an elevator, or some similar interruption to our routine. This year has been uniquely devoid of such stage effects. But, it nevertheless held its headache — the New York City Department of Sanitation went on strike. Remember? It was February 2nd, a Friday, and when the first of our regularly scheduled three dumpster pickups failed to arrive at 8:00 a.m., we knew we were in for it. By 4:30 in the afternoon, the reality of the situation littered our entire pick-up and delivery platform to the ceiling. The Department of Sanitation, when called, *would* give no answer; the



Frequent conferences of the medical and para-medical staff provide important interchange of ideas and information.



Hospital lobby — gateway to hopes and expectations of the many who are entrusted to the care of the entire staff.



Youthful patient expresses confidence and determination.

Mayor's office *could* give none. Now, the interesting thing about garbage is that you have to do something about it; snubbed, it doesn't just go away; indeed, it feeds on being ignored. Our incinerator in the Research Building came to mind as the best solution — but was far too small. But, the Head of Maintenance at New York Hospital was most cooperative and agreed to handle the situation if we could deliver barrels that evening. Have you any idea how many barrels of garbage a relatively small hospital like HSS can produce in a single day? That Friday evening we trundled 32 barrels through the tunnel that links us with New York Hospital; Saturday we held the number down to 18 and Sunday (thanks to the weekend) to 12; but the following Monday we were back at 32. Wednesday, February 7th, the Sanitation Department finally gave us some relief, but this was only temporary and we again fell back for succor on our neighbor across 70th Street. Except for their assistance we would have been forced to vacate all cars from the first floor of the warehouse and use this for a garbage disposal area.

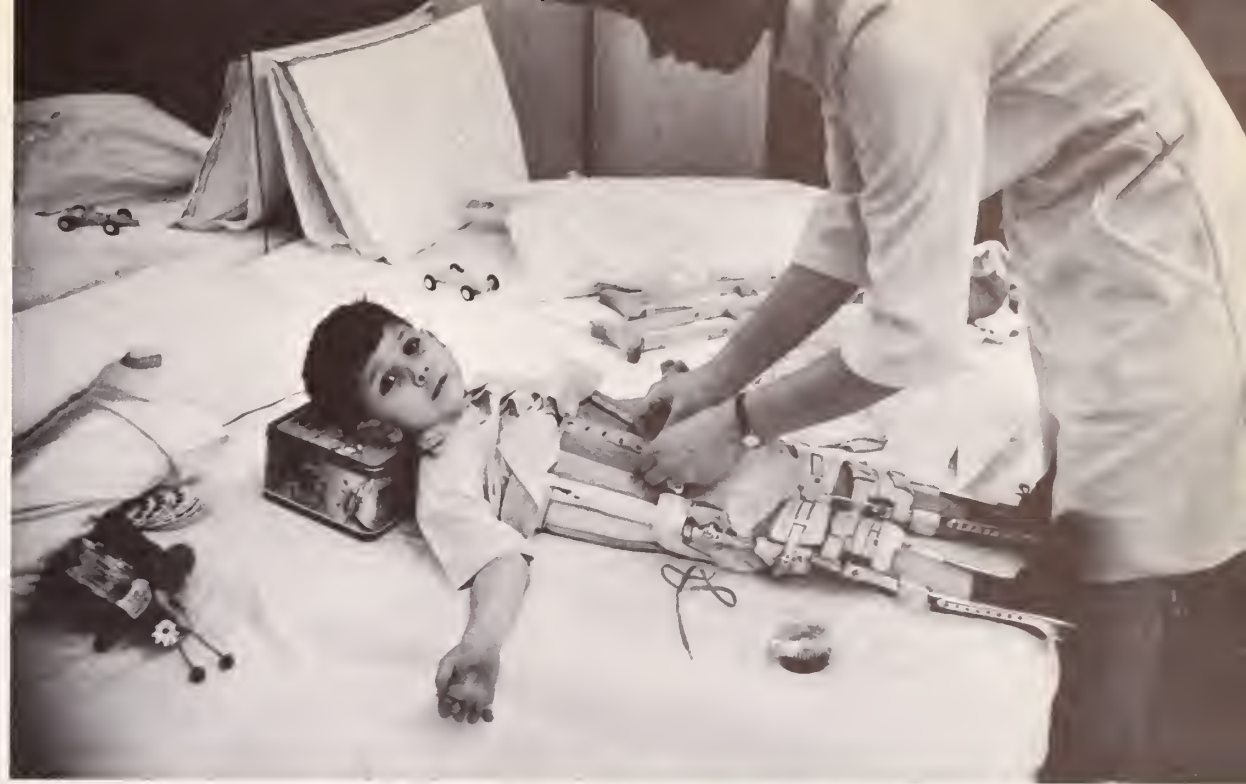
Those of us who are connected with The Hospital For Special Surgery are so conscious of the magnitude of its triumphs over the past century that we tend to overlook the endless details that have made those triumphs possible. Some figures I came across recently demonstrate not only the number of the details, but also their proliferation within any given field. The specific figures relate to one small department, the Department of Photography, but they represent virtually every other segment of our Hospital. Since 1962 the number of photographic projects per year has increased from 1,159 to 2,252. But this is minor compared with the increase in project size. In scoliosis filming, to cite one example alone, in 1962 five black and

white negatives were required for each patient. By last year requirements had grown to 5 black and white negatives and 5 prints without brace, 9 black and white negatives and 9 prints with brace. Besides still photographs, movie making — though hardly on the scale of Hollywood — has increased substantially. In 1962 the footage was 2,870 feet versus 10,230 feet in 1968, with an average of 50 feet required per patient. In 1962 the photographers rarely went into the Operating Room. Now they are there from 10 to 15 hours a week, and this is continually increased by the doctors' demands.

In a certain way it seems to me that the last two paragraphs sum up a great deal of the life at HSS — the intrusion of irritations that disturb our pursuit of medical and surgical perfection, and the endless (and at times seemingly microscopic) steps we make toward that perfection. It is reflected, among other things, not only in the increasing number of cures we are able to effect, but also in the constantly shortening time we need to perform these cures. And whoever, when we were a fledgling institution on Lower Second Avenue, could have foreseen what we have become today? Who now, indeed, as we step further into our Second Century, can foresee what we shall be in another hundred years? We can only hope for the best, and I, for one, am sure we shall attain it.

T. Gordon Young
Administrative Vice President

Physical therapy — along the road to recovery,
well being and independence.



Report of the Director of Nursing

The Nursing Department is constantly striving to maintain and upgrade its services to our patient, his family and his Doctor within the framework of the philosophy of our Hospital. In order to do this, we are continuously trying to devise new methods to stimulate the interests and imaginations of the members of the nursing department.

During this past year we think the most important overall Hospital project was the review and updating of the job description of each employee. The Supervisor and the Employee, in rewriting and revising the job descriptions, established better interpersonal relationships and more understanding of their roles. This survey pinpointed the urgent need for an employee periodic job evaluation. This means that a new job evaluation form must be developed that will meet the needs of each department.

Salaries and fringe benefits were adjusted in order for us to be a forerunner in meeting the supply and demand for professional nurses.

Our primary recruitment features continue to be housing at attractive rents, a minimum amount of rotation and being able to grant every other weekend off duty.

The year ended with a slightly higher complement of staff especially in the professional registered nurse group.

	<i>January 1968</i>	<i>December 1968</i>
RN's	68	73
LPN'S	85	84
Non professionals	94	99
	<u>247</u>	<u>256</u>

Our turnover rate for the year was 43.9% as compared to 50.9% in 1967.

Tray service which has been taken over by the dietary department plus the use of full time and part time floor clerks has

released the nurses for better patient planning and service.

In the Central Service Department the installation of a large new Ethylene Oxide Sterilizer has been a tremendous improvement for decontaminating small equipment and materials that cannot withstand heat and constant soaking.

Three Merch Respirators have replaced the Air Shield Units in the intensive care unit for the children with curvature of the spine and respiratory conditions.

Our Out-Patient Department, one of our greatest contributions for maintaining optimum community health, is also our link in the continuity of care for our discharged patients. Each new clinic patient is oriented to the clinic facilities by a member of the nursing staff. He is informed of the services, policies and procedures that are offered in the clinics of the out patient department. The patient's family is encouraged to participate in the orientation program and to visit with the doctor in order to develop a planned program of care.

Two nurses, one registered professional nurse and one licensed practical nurse are assigned to each clinic section. The registered nurse is expected to explain doctors orders and procedures. She is also considered the contact for the patient, should the patient encounter difficulties between clinic visits. An appointment system has been instituted in order to minimize the length of time for the clinic

visit. Every effort is made to enable the patient to be examined by the same doctor on each succeeding visit, and the nursing staff remains the same in each clinic. A nurse's aide has been added to the staff to assume the unskilled duties, thus freeing the professional staff for greater and more meaningful contact with the patient.

The out-patient department is a never ending source of clinical experiences for the practical nurse students and the affiliating professional nurse students here for an eight-week orthopaedic experience. Recognizing the importance of the environment in the care of the patient, the waiting room in the clinic has been redecorated in bright, pleasant hues. The wooden benches have been replaced with colorful individual seating arrangements.

The Operating Room staff performed 2,584 operations in 1968 a record high for this department. The surgical technician course was re-instituted and proved very effective in meeting the department needs. An operating room in-service education program has been very successful for staff communications and providing information for new procedures, techniques and policies of the department. The Supervisors of the Operating Room, Recovery Room and Central Service have actively participated in the discussions for the future expansion plans for the operating room.

Additional disposable supplies are gradually pre-empting indisposables.

Miss Gwendolyn DuBuque, assistant supervisor, retired and Miss Ingrid Anderson assumed her position.

The Ward Manual Committee is one of the most active Committees in the Hospital. The Objective of this committee is to compile a dependable and authoritative policy and procedure manual for the use of the nursing staff. Progress is slow



because it is a tremendous undertaking and constant revision is necessary.

The Supervisor of the In-Service Education program presents a detailed orientation for our new personnel. She serves on many interdepartmental committees and works with them in an exchange educational program.

The institution of new procedures and policies involves constant meetings with the nursing service supervisors and staff. The most important nursing procedure introduced in 1968 was the use of the Mac Bick Medicine Cart. These carts, with an individual drawer for each patient, are sent to the Pharmacy once a day from each floor unit to be filled by the pharmacists. This procedure has provided the pharmacy with a more accurate drug control and has drastically reduced the need for the nursing department to make numerous trips to the pharmacy. Any change creates problems and this procedure proved to be no exception, but the transition was made much easier through the efforts of the in-service education department.

The Home Care Office under Miss Gloria Smith functions as the liaison for home care, nursing homes and the visiting nurse service.

The Nursing Education Department, under the capable leadership of Miss Mildred Hallock, provides excellent practical nurses for the community.

The attrition rate continues to be high, for example, of the 67 students admitted only 45 students remain. The reasons for leaving are varied, e.g., "do not like it", "it is too hard", "too many home problems" and dismissal by the faculty.

In November 1968 Lenox Hill Hospital notified us that in May 1969 it would be necessary to withdraw its affiliation for our students. The decision was based on the



Practical nursing student ponders a question

questionable economy of employing two full time Instructors for 5-7 students. We are grateful to Lenox Hill for the splendid cooperation they have given us through the years and for the excellent clinical experiences they have provided for our students. It is with regret that we sever this relationship. The New York Hospital, our other affiliating Hospital for our students, will continue to accept 15 students.

The high attrition rate made us decide to limit our classes for the present to 15 students. Recruitment is difficult in getting enough qualified candidates but hopefully this will lessen with the entrance of smaller classes. The faculty at H.S.S. consisted of 6 full time instructors, 1 part time nutritionist and 1 part time instructor. New York Hospital provided three full time instructors for our students.

We had a complete re-survey by the National Association for Practical Nurse Education and Services Inc. in November 1968, and we have been fully accredited again until 1973.

On the State Board Examinations, in July the State Mean was 471 — H.S.S. was 501, in November the State Mean was 469 — H.S.S. was 536. In this examination seven candidates achieved a grade of 90% or over. We think the faculty of all the hospitals deserve commendation for this splendid showing by our students.

During the past year we have felt that more students are entering our school with severe limitations in basic arithmetic, spelling and reading comprehension. This is occurring in girls who test intellectually high. Therefore in addition to the practical nurse curriculum, extra tutoring, outside drills and a short course in the skill of communication have been included. This lack of basic fundamentals certainly contributes to our "drop out" rate as student frustration is high when trying to learn the more complex material in nursing.

The faculty plans for 1969 include the continued re-evaluation of the curriculum in terms of their own experience and ideas as well as the recommendations from the accreditors.

The R.N. students from Mary Immaculate Hospital came to us for an eight-week clinical experience in orthopaedics and rehabilitation. This past year we assigned them to our new comprehensive arthritis program. This program is designed for total participation by all members of the health team for total comprehensive care of the arthritic patient.

In September 1966 we established "The R.N. Scholarship Fund for Practical Nurses". This is a program in which selected graduates of our School of Practical Nursing are given tuition fees and a living allowance up to \$5,000 for a period of two years. At the completion of this course they return to the Hospital for Special Surgery as graduate registered nurses. Sixteen students were enrolled in this program in 1968. This coming year we will begin to reap the benefits of this program. Six registered nurses will return to us by September 1969. This will be an on-going program for five students each year. It is expensive (\$5,000 per student) but certainly worthwhile to the community, to the individual and the Hospital.

Two registered nurse Instructors who are attending the University of Pennsylvania in order to obtain their B.S. degree are also under H.S.S. sponsorship. These Instructors will return in September 1969.

Eight registered nurses have taken advantage of our tuition-free scholarship plan and are working toward a B.S. or M.A. degree in nursing.

Financial aid has been given to eight practical nurse students and tuition-free scholarships awarded to four other students.



Above: Nursing supervisors confer in never ending educational process.

Diagnostic x-ray's help physician determine best corrective orthopedic device, be it brace, body cast or shoes.

This coming year we hope to return to the respective departments all non-nursing functions such as direct purchasing, receiving and storage.

We plan for our Central Service to absorb the non-technical duties of the operating room staff in order that we may use our professional staff to better advantage.

We plan to offer our clinical facilities for teaching purposes to certain community colleges which have approached us to provide this experience.

We will continue to maintain and endeavor to strengthen communications with all departments.

The investigation for better methods to control infection will again be one of our primary considerations.

This department expresses with gratitude the continual support that we have received from Mrs. Horace Brock, Chairman of the Nursing Committee, to the Board of Managers and to Mr. T. Gordon Young, our Administrative Vice President.

D. Dean Smith, R.N.
Director of Nursing



Report of the Director of Social Service

It is said that when services are offered, demands for them increase; this seems to be the experience of the Social Service Department. The present professional staff here is made up of eight Master degree workers and three college graduate case aides. With a staff so professionally qualified, there is a continuing drive toward *New Directions*: At the annual meeting of Directors of Hospital Social Service Departments in Minneapolis, under the auspices of the American Hospital Association, it was recommended that the recording of all Social Service information be put directly into the patient's medical chart. This has for long been the practice in many medical centers. To arrange this efficiently, the experience and methods in these other hospitals were investigated, and staff meetings in our own Department on several occasions were devoted to lengthy discussion before standards were set for these recordings. The procedure was approved by the medical records committee and the Medical Board. Attending physicians and Resident physicians together with other department heads were notified in writing so that the recording might begin in the new year.

Physicians caring for private patients continue to refer their patients who might be helped by a social worker. There is no charge for the service, and the requirement is that the doctor discuss the referral first with his patient. The majority of referrals have been for disposition services rather than ongoing casework; these however are time consuming and add to the work load of all staff members and during the year increased to about fifty. The social workers have been gratified and encouraged by the physicians' recognition of their efforts utilized in social and psychological difficulties unrelated to the patient's financial circumstances.

With the increase of hospital admissions each year, it is necessary that all departments offering services cooperate with each other, sharing information in a professional manner for the most efficient care of the patient. Preliminary meeting of Social Service and Physical Therapy departments evolved into the formation of an Inter Departmental Professional Education Committee now representing members of many departments. The purpose is to acquaint each department with the function and objectives of every other department, for a better relationship of all personnel, with improved communication regarding patient care and program planning.

The results of a study conducted by Mrs. Alexander, Children's Caseworker, with the assistance of volunteers from the Social Service Committee revealed that the medical staff in particular was unfamiliar with the function of the various departments concerned with out-patients, including Social Service. This led to distribution to the medical staff of a drawing of the structure of the Social Service Department outlining its many services and distinguishing them from services offered by other Out Patient Departments.

Transportation arrangement for patients to clinic and treatment sessions is extremely time consuming and costly. Medical prescription for transportation is required and the need for financial assistance is established by the caseworker. The very nature of the services to which the hospital directs its treatment, Orthopaedics, Arthritis, leaves no doubt regarding the severity of physical handicaps involved. The problem of transportation is increased manifold by these physical handicaps and by the territory of the hospital which is unlimited. Approximately fifteen clinics, in session at various times, refer patients for

transportation. These continually interrupt the social workers making it difficult for them to work with consistency. The decision was made to train one of the Department secretaries to assume responsibility for much of the mechanics involved. Medicaid will reimburse the department for patients eligible under that program and this requires extensive paper work. Medicare makes no provision for transportation for out patient services. Giving this responsibility to one secretary saves time for the caseworkers, but increases the burden of our already overworked secretarial staff, whose loyalty, cooperation and efficiency are a great support to the department.

No year passes without staff changes. Three graduate workers and one case aide resigned for various personal reasons, and in January we welcomed back a former worker, Mrs. Alice Woo, a graduate of Fordham University School of Social Work who has had considerable experience with other agencies.

As a result of the Social Service Scholarships we obtained two graduate staff members committed to the department for one year, Mrs. Gloria Galura Siasoco and Miss Eileen Ofsowitz. Miss Marilyn Tesoriero previously on the staff of Henry Street Settlement joined us in the latter part of the summer as an additional graduate worker for the Cerebral Palsy Service. This service covers an annual caseload of approximately 400 cases. Mrs. Lourdes Oates who recently completed her studies with the American Committee for Refugees in the Professions after leaving Cuba, replaced the case aide who resigned. Her fluency with the Spanish language is an asset in the Cerebral Palsy Department.

Miss Catherine Pollak; was employed as a secretary and a vacancy for receptionist was filled by Miss Camille Romano. The

New York University student who accepted the two year scholarship in September 1967 withdrew for personal reasons after one year. This was a disappointment but fortunately we received an application from Miss Jane Herron of Fordham Graduate School for the remaining one year scholarship. She will join us next June. The two year scholarship beginning September, 1968 was awarded to Miss Patricia O'Callaghan of Pocasset, Massachusetts, attending Boston College Graduate School of Social Work. We were gratified that the Women's Auxiliary at their December meeting voted to support the scholarship at a cost of \$6,000.00 and will vote on this each year.

The Comprehensive Arthritis Program introduced in September, 1967 has grown into a very active service. During 1968, 76 patients were presented following complete work-up by various members of the team including the social worker and of these 68 were accepted for the program. Through the efforts of all its members, the team attempts to rehabilitate the severely handicapped patients for a useful and independent life. The social worker is particularly concerned with the patient's motivation, and the social and psychological difficulties which may hinder or interfere with his progress.

Several Attending physicians responsible for particular specialty services have requested the assignment of individual social workers to coverage of these services both in patient and out patient. Although these arrangements promise efficiency and several advantages for sustaining performance, they do oblige us to increase our staff.

The two Fordham University graduate students assigned for one year had a satisfying and beneficial experience under

the supervision of Mrs. Kathie Schreiberman. Mrs. Schreiberman's teaching ability and her astuteness in the selection of patient cases for their learning process was most gratifying to them and made their first year of graduate school profitable. In September two first year students were again assigned, Sister Marie Malone of the Franciscan Order and Miss Sonia Erlach.

This year the weather was kind to the campers and the 102 patients accepted by the six different camps enjoyed their experience. Each year the Southampton Fresh Air Home accepts 60 patients and becomes more inviting. We visited the Camp again this year and saw the improvement in so many of the children. The other five camps which accept patients are Camp Oakhurst under the auspices of the New York Service for the Orthopedically Handicapped, Hidden Valley (Herald Tribune Fresh Air Fund), Camp Carola (New York Philanthropic League, Camp Jawanio and Camp Wagon Road under the auspices of the Children's Aid Society.

Innovations, changes, introduction of new procedures and additions to the staff are all designed with one objective — improved casework services to assist patients to more independent living. To accomplish this, the full cooperation and enthusiasm of the entire staff, professional and clerical, is essential — it is a satisfaction to report their generous participation.

It is encouraging to recall the endeavors of Mrs. Kathie Schreiberman and Mrs. Alice Woo whose interest in improving casework services and concern for high professional standards have been particularly supportive.

A great drawback to successful performance is the physical arrangement of the department where no caseworker has an enclosed office for privacy in interviewing. This is repeatedly a source of discomfort and at times embarrassment.



Frequent and prolonged thought has indicated that relocation is the only solution.

Our work would be more toilsome were it not for the generosity of friends, whose financial assistance permits us to provide for patients in emergencies. In particular we mention the Walter Scott Foundation and the Josephine Karet League. Some others prefer to remain anonymous.

Problems of administration, supervision, staffing and general management are continuous and often difficult, still they are not critical, and we escape frustration due to the considerate judgment and understanding of Dr. Robert L. Patterson Jr., Surgeon-in-Chief. Mr. T. Gordon Young's comprehension of our aims gives us the continued support which is indispensable. In a separate sphere we are repeatedly indebted to Mrs. Walter J. Fried, Chairman of the Women's Auxiliary, and the Social Service Committee under the chairmanship of Mrs. Robert L. Patterson Jr.

Margaret M. Ryan, A.C.S.W.
Director of Social Service

Report of the Chairman of The Women's Auxiliary

The year 1968 was one of accomplishment for the Women's Auxiliary. Our meetings were well attended and we have enjoyed many interesting talks by doctors and hospital personnel.

We were successful in the United Hospital Fund campaign and under the leadership of Mrs. David Reuter, exceeded our quota for the seventh successive year. Mrs. Philip D. Wilson, Jr. and Mrs. Jane R. Fitzgibbon were co-chairmen of Box Week and here again we had the highest total of any New York hospital. Mrs. Henry A. Alker, who had for long been an active and valued member of our group, died in September. She is greatly missed by us all. Mrs. John Reynolds resigned in March and was presented with a scroll and gold charm to commemorate her many years with the Auxiliary.

An outstanding feature of our meetings is the Treasurer's report by Mrs. Robert Freiburger who has the faculty of making a balance sheet exciting and interesting.

We again provided funds to purchase Christmas presents for service patients. This project is always popular with the participants. The case workers enjoy selecting the gifts and the recipients are happy to be remembered.

Mrs. Sidney Voice was appointed chairman of the Gift Shop committee and has worked tirelessly and with taste and imagination to make the shop an attractive adjunct to the hospital. Mrs. Robert Powell, who has assisted her, will be co-chairman in 1969. Mrs. Frances Hage became manager in July and her enthusiasm, efficiency and attractive personality have endeared her to all. The shop will be decorated in the near future and we have ambitious plans for the coming year.

Volunteers —

Mrs. Newcomb D. Cole, Chairman

The Volunteer Department report appears in another section of the Annual Report. It should however, be noted here that much of the invigorating atmosphere in this department is due to its professional director, Miss Virginia Roberts and to her assistant, Mrs. Ceil Rappaport. Miss Roberts, through her affiliations, is in constant touch with activities at other hospitals and brings back to us fresh approaches as she represents us with grace and charm.

Patients' Library —

Mrs. William Arnold, Chairman

The library submits a separate report. However, I would like to express appreciation to Mrs. Arnold for her untiring and efficient leadership of the library committee. Mrs. Arnold has resigned and Mrs. Oscar Brenner will take her place in 1969.

Social Service Committee —

Mrs. Robert Lee Patterson, Jr., Chairman

Members of the social service committee have, as in former years, processed applications for summer camps and assisted with the physical examinations of the campers. They have also organized the departure of the children for camps in June.

The scholarships for graduate students in social work which were originated by Mr. Jerrold Golding are now sponsored by the Auxiliary. Each recipient is awarded \$3,000 a year and agrees to spend at least two years in the department. Mrs. Cole performed a valuable service by researching community resources in the city. Large scale maps were purchased by the Auxiliary to inform patients as to the location of various facilities available to them. We are grateful to Mrs. Cole for the

time and effort spent in this most beneficial project.

United Hospital Fund —

**Mrs. David Reuter, Chairman;
Mrs. Philip D. Wilson, Jr.;
Mrs. Jane Reuter Fitzgibbon,
Box Week Chairman**

Contributions for the year amounted to \$19,603 representing 488 gifts. Box Week total was \$1,894.

Occupational Therapy —

Mrs. David Reuter, Chairman

Two students from Tufts university received a nine week training period in the department which has continued to show an increase in patient treatments. The Christmas sale was again successful and netted \$883.55 which was donated to the Second Century Development Fund.

Membership Committee —

Mrs. John Rutherford, Chairman

There are 35 members of the Auxiliary, 26 active and 9 contributing. We welcomed one new member — Mrs. Harold P. Kurzman. Mrs. John Reynolds, Mrs. John F. Weis and Mrs. Burgess Royce resigned.

In conclusion, I wish to thank each member of the Auxiliary for her encouragement and support, Miss Ryan for her invaluable help to me and Mr. Young for his assistance and cooperation.

Brita Digby Fried
Chairman Women's Auxiliary

Treasurer's Report — Mrs. Robert Freiburger
STATEMENT OF CASH RECEIPTS AND CASH DISBURSEMENTS
FOR THE YEAR ENDED DECEMBER 31, 1968

Cash Balance — January 1, 1967..... \$29,543.63

Receipts:

Receipts from Charitable Organizations and Individuals for	
Designated Purposes	\$ 2,000.00
United Hospital Fund.....	18,253.00
Greater New York Fund	5,336.00
Dues recorded	500.00
Interest on savings accounts	1,221.47
Library	1,344.80
Miscellaneous	1,346.39
Total Receipts	30,001.66
Total	59,545.29

Disbursements:

Contribution to Hospital for Special Surgery.....	30,000.00
Office expense	1,702.04
Library	937.75
Social Service relief	1,188.52
Shoes	230.94
Transportation	413.00
Braces	372.00
Appliances	17.00
Total Disbursements	34,861.25
Balance	24,684.04

Transfer to Social Service Department

"Funds for Designated Purposes":

Walter Scott Foundation Fund.....	4,254.71
Karet League Fund.....	2,310.62
	6,565.33

Cash Balance — December 31, 1968..... \$18,118.71

ACCOUNTED FOR AS FOLLOWS

Morgan Guaranty Trust Company	\$ 1,697.83
East River Savings Bank	6,890.68
Seamans Bank for Savings.....	1,120.32
Fourth Federal Savings and Loan Association.....	8,064.60
Petty Cash — Miss Ryan.....	345.28
	<u>\$18,118.71</u>



Report of the Chairman of The Alker Memorial Library

The year 1968 proved to be an extraordinarily productive one for our Patients' Library. We started the year with a new librarian, Mrs. Louise Heinze, and our volunteers rallied 'round with increased energy and dedication to assist her, take on additional activities, and effect some dramatic changes.

First of all we held a "Collector's Choice" Book Sale in March. This was a separate sale from our annual Spring and Christmas book sales. It was comprised entirely of books of unusual interest and value, such as first editions, limited editions, collected works, and autographed volumes. Mrs. Burr P. Wilson, our former librarian, worked with us as a volunteer to help plan and organize this sale. Her invaluable assistance was largely responsible for the success of this endeavor.

After a complete inventory of the adult and children's book collections was finished, our volunteers undertook as a summer project, a serious reappraisal of our current collection. Extensive removal of out-of-date books, and those in worn condition was carried on, particularly a drastic "weeding out" of the May Arents Averell children's collection. Our juvenile collection was then refurbished with a choice selection of newer books, especially the picture books and easy-readers needed for our youngest patients.

At the same time both collections were entirely re-arranged to give them a "new look," with a monumental housecleaning task included. To complete the transformation, a library wall was repainted a new shade of aqua and matching curtains were hung.

This sounds like an exhaustive summer activity, but it is even more remarkable that all this was carried out in addition to a full schedule of library service to our patients.

In the past we have offered bookcart service only once-a-week in the summer months. This year, however, for the first time in its' history the library was able to provide its' twice-weekly services throughout the entire summer. Since the hospital occupancy was higher than usual, we were very glad to have been able to meet the increased reading demands.

In the fall we added three new volunteers to our staff; Mrs. Richard McClenahan, Mrs. Ferdinand Davis, and Mrs. Charles Haight. We were particularly pleased to welcome these able women to the library at a time when we regretfully lost the services of one of our most charming and capable volunteers, Mrs. Hazard Gillespie, who retired from our ranks when she opened an antique shop in September. She has been sorely missed, not only by the library committee, but by many patients as well.

In November our Patients' Library Committee co-sponsored a special meeting in conjunction with the Committee on Patients' Libraries of the United Hospital Fund. Entitled Library Service for Hospitalized Children, the program was designed to encourage hospitals to develop pediatric library services. The main speaker was Mrs. Clara Hulton of the New York Public Library who discussed "Children's Books & Story Hours". Several of our young patients then participated in an on-stage demonstration of story-telling techniques. After a tour of the hospital, our guests had luncheon in our cafeteria with Mr. T. Gordon Young as host. We were very happy to display our so recently renovated libraries and to be part of this stimulating and informative program.

The year ended on a sad note for us, however, when we learned of Mrs. Henry A. Alker's death. Mrs. Alker's husband founded the Alker Memorial Library in 1926 in memory of his mother. Through the years

Mrs. Alker's continued interest and concern in the Patients' Library have been a source of strength. She will long be remembered by all of us.

Library Staff:

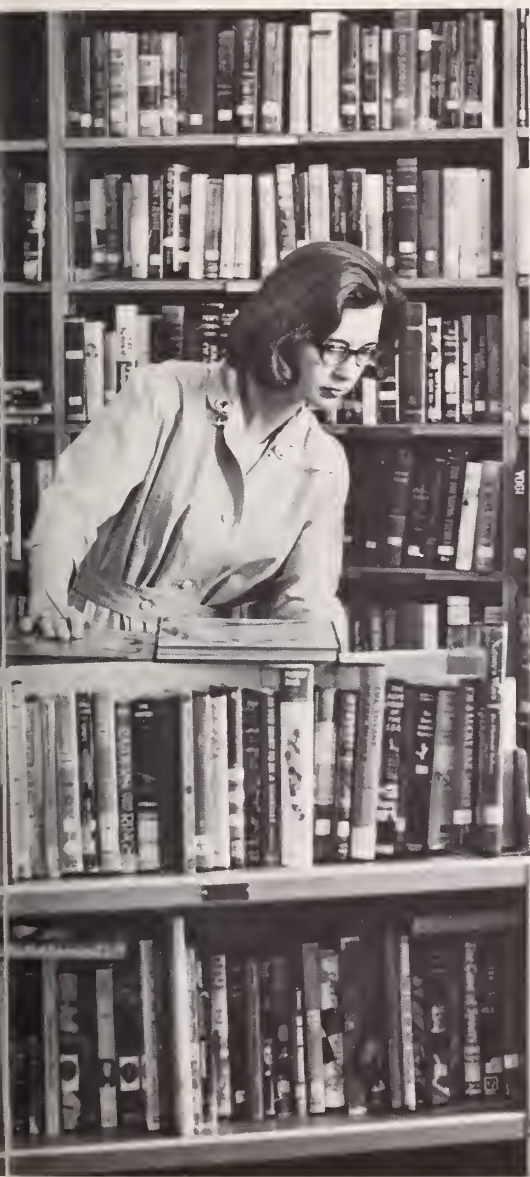
Mrs. Louise Heinze, Librarian
Mrs. William D. Arnold, Chairman
Mrs. Armitage Watkins,
Vice-Chairman
Mrs. Robert L. Kohns, Treasurer
Mrs. Newcomb D. Cole,
Assistant Treasurer

Regular Volunteers:

Mrs. Charles S. Bannerman
Mrs. Willis Bardwell
Mrs. Oscar D. Brenner
Mrs. Ferdinand Davis
Mrs. Carl Fowler
Mrs. Robert F. Freiburger
Mrs. S. Hazard Gillespie
Mrs. Charles Haight
Mrs. John D. Insall
Mrs. Murray Mandel
Mrs. Richard McClenahan
Mrs. Burr P. Wilson
Miss Elizabeth Wurzbarger

Books and magazines borrowed	18,810
Prism glasses borrowed	198
Reading stands borrowed	108
People served (adults, children & Staff)	7,831
Books in Library Jan. 1 1968	6,368
Added during year	585
Withdrawn during year	1,070
Books in Library Dec. 31, 1968	5,883
Total volunteer service hours	3,051½

Barbara Neubauer Arnold
Chairman, Alker Memorial Library



Report of the Director of Volunteers and Recreation

During 1968, 194 volunteers gave 22,106 hours of service in 18 major areas of the hospital. In terms of quantity this was a record exceeded only five times in the last 20 years.

Quantity alone, however, can never be considered an adequate measure of the success of a volunteer program. At HSS it is the combination of quantity and quality which has made the volunteer program successful for many years. 1968 was no exception. The volunteers demonstrated again their value to the hospital not only by the number of hours they worked, but by their abilities, their loyalty, their interest and their reliability. It must also be said that the staff of the hospital has generally made excellent use of the volunteer help offered. They have created a pleasant, welcoming climate that has made it possible for volunteers to do the kind of work that is important to the hospital, to the patients, and to themselves.

During 1968, the greatest number of volunteers and volunteer hours were given in departments concerned with direct patient care — Nursing, Recreation, OPD, Admitting, X-Ray, Chaplaincy Services and P.S. 402.

In the Patients Library and in the Gift Shop, volunteers devoted over 5,000 hours of time to providing services to both patients and staff.

Many volunteer hours were devoted to clerical work for the Accounting, Laboratory, Social Service and Fund Raising Departments, and at the Information Desk during the evening. Also, in the Volunteer Office several ladies regularly pre-assembled patient charts, stuffed weekly bills, and prepared all patient information folders.

Almost 2,400 hours were given in Central Sterile Supply, where volunteers have been particularly well utilized by Mrs. DeGregorio and her staff.

In July, an excellent group of 25 Junior Volunteers was trained by Miss Belmont to assist on the adult patient floors. They stayed through the summer, with some continuing into the fall, and this group gave the Nursing Department nearly 1,600 hours of help.

The Children's Recreation Department, headed by Mrs. Brenda Gregory, completed a busy and successful year. Miss Janet Van Horn joined the staff as Assistant in February, and the department has benefitted from an affiliation with The Play Schools Association, Inc., whose consultant has given valuable advice and provided information on the activities of other recreation programs in New York.

Special events included a Valentine's Day show by "The Cowsils"; an Easter morning party given for the younger children by the teen-age patients; an open house in July to celebrate additional recreation space, with a puppet show written and performed by the children; a summer cook-out on the roof; a Hallow'een party, which featured costumes made by the children themselves and a "trick or treat" visit to the adult floors; and a number of Christmas holiday activities, including a large tree trimmed with imaginative hand-made decorations.

New equipment — a sewing machine, a wood-working bench, an autoharp, and a billiard table — expanded the facilities of this area on the 5th floor where each child is given individual attention and encouraged to participate in a wide range of recreational projects.

During the summer, a new evening program of adult recreation was started in the 6th floor solarium under the direction of Mrs. Gregory. Five volunteers were initially assigned to this project to assist patients with a wide variety of arts and crafts, sewing, needlework and painting. The program has been so successful that it has been necessary to assign more volunteers to expand activities to the 7th floor and to the



bedside of patients unable to get into the solarium.

The following list of departments in which volunteers worked shows the wide range of their services to the hospital; but one of the most interesting facts about the volunteer service done here is that within traditional departments many are doing untraditional jobs — jobs that are specialized and sometimes tailor-made to fit particular needs. Such jobs include volunteer teaching of special subjects for P.S. 402; the cooking class for teenagers; the hand-finishing of slings for Central Sterile Supply (one volunteer sewed 1,000 in 1968); "special cases" for Social Service requiring the time and personal attention that only a volunteer can offer; and the yearly processing of handicapped children for summer camps, done by the volunteer social service committee. In addition to their regular jobs, volunteers have also found time to help out with special projects. They have put up Christmas decorations; wrapped and priced packages for the Gift Shop Boutique; spent hours coloring posters; entertained families of out-of-town patients, interpreted in a number of different languages; taught English to foreign patients, and foreign languages to American patients; and done personal shopping for patients with special needs.

They have also given not only their time to the hospital, but hundreds of books and magazines to the Library, the entire supply of cookies for the Clinic Coffee Cart, educational materials to P.S. 402, project materials of all kinds to both the OT and Recreation Departments, and many beautiful hand-made products for the annual sales held by OT and the Gift Shop.

The volunteers of HSS have indeed been givers; and there is every indication that they will continue to give their time, their talents, their gifts, and their abiding loyalty to the hospital in the years to come.

Virginia L. Roberts
Director of Volunteers.



Two volunteers, whose service to hospital totals over 26 years and 12,000 hours, at work in central sterile supply.

VOLUNTEER DEPARTMENT — 1968 STATISTICS

Month	Hours	Volunteers
January	1461½	93
February	1960½	114
March	2180	105
April	2104	105
May	1746½	105
June	1542½	92
July	1791	96
August	1800½	86
September	1588½	86
October	1823	87
November	2020½	93
December	2083	93
Total	22,106	194

Miscellaneous Data

Volunteers

90 New volunteers processed
150 Day volunteers
44 Evening volunteers
169 Senior volunteers
25 Junior volunteers
25 Red Cross referred volunteers
22 Hunter field workers

Individual Hours

Over 900 hours 1 volunteer
Over 500 hours 5 volunteers
Over 300 hours 16 volunteers
Over 150 hours 55 volunteers

Length of Service

Over 33 years 1 volunteer
Over 25 years 3 volunteers
Over 20 years 5 volunteers
Over 15 years 14 volunteers
Over 10 years 24 volunteers
Over 5 years 45 volunteers
Over 2 years 75 volunteers

Grand Total of Volunteer Hours for 20 Years — 1949 through 1968

368,344 — 1949 through 1967

22,106 — 1968

390,450 — Grand Total

Areas of Volunteer Service

1. Nursing Department 57 volunteers
5400 hours
Central Sterile Supply
Patient floors
Office & clerical work
2. Recreation Department 50 volunteers
1700 hours
Adult Recreation
Children's Recreation
3. Patients Library 19 volunteers
3050 hours
4. Gift Shop 21 volunteers
2330 hours
5. Out Patient Clinics 15 volunteers
2500 hours
Registration of new patients
Appointment Desk
Club Foot Clinic
Cerebral Palsy Clinic
6. Admitting 5 volunteers
1000 hours
7. Fund Raising & Public Information
8. Social Service Department
9. Chaplaincy Services
10. P.S. 402
11. X-Ray Department
12. Laboratory
13. Coffee Cart
14. Accounting
15. Physical Medicine
16. Information Desk
17. Research — for individual doctors
18. Volunteer Department



Volunteer assists patient with letter.



Child patients presented by resident physician at children's conference — a regular phase of teaching program

THE HOSPITAL FOR SPECIAL SURGERY VOLUNTEERS — 1968

30 YEARS AND OVER

Mrs. Philip D. Wilson

25 YEARS AND OVER

Mrs. Benjamin Lorber
Mrs. David Rentz

20 YEARS AND OVER

Mrs. Oscar Brenner
Mrs. Willis Phillips
Mrs. Norma S. Wurzbarger

15 YEARS AND OVER

Mrs. Charles S. Bannerman
Mrs. O. Vaughn Dennis
Mrs. Robert Geller
Mrs. André Istel
Mrs. Albert Kinney
Mrs. Henry Numrich
Mrs. John D. Sloane
Mrs. Earl VanDerwerker
Mrs. Armitage Watkins

10 YEARS AND OVER

Miss Margaret Armstrong
Mrs. Newcomb D. Cole
Mrs. Max H. Friedman
Mrs. Saul Goldstein
Mrs. Raphael Meisels
Mrs. Robert Lee Patterson, Jr.
Mrs. David Reuter
Miss Paula Ritterman
Mrs. George F. Rooney

5 YEARS AND OVER

Mrs. William Arnold
Mrs. Ivor Bevan
Mrs. Jay Bresler
Miss Claudia Cassidy
Mrs. J. Howard Denny
Mrs. Charles Deyo
Mrs. Esther Dreyer
Miss Geraldine Evans
Mrs. Carl E. Fowler
Mrs. S. Hazard Gillespie
Mrs. Hugh J. Howell
Mrs. Francesca Kingsley
Mrs. Robert Kohns
Mrs. Ida Levine
Mrs. Murray Mandel
Mrs. Edward Millstein
Miss Esther Murrell
Mrs. William E. Parsley
Miss Molly Rosenthal

Miss Yolande Salzat
Mrs. Helen Scherer
Mrs. Lee Ramsay Straub
*Mrs. David Wiltsek
Miss Elisabeth Wurzbarger
Mrs. Evelyn Zavin

UNDER 5 YEARS

Miss Lenore Allen
Mr. Thomas Arno
Miss Marcia Arnold
Miss Cecilia Barbosa
Mrs. Willis H. Bardwell
Mrs. W. Lloyd Barnard
Miss Sydelle Beiner
Miss Miki Belloni
Mrs. Ted Berk
Mrs. Sidney Berman
Miss Elisa Bernardi
Miss Gloria Bienenstock
Mr. Keith Block
Mrs. Sidney Blue
Mrs. Joseph Boss
Mrs. Robert G. Bradford
Mrs. Charles Brennen
Miss Bonnie Brooks
Miss Frances Broughton
Miss Beverly Burton
Mr. Michael Calcagnile
Mr. Dominic Capezza
Miss Freida Celniker
Mr. Benjamin Cohen
Mrs. Jerome Cohen
Miss Mary Courish
Mrs. Robert Curlette
Mrs. Stanely Damkroger
Mr. Vincent D'Andrea
Miss Rosetta Darraugh
Mrs. Ferdinand Davis
Miss Nancy K. Denges
Miss Kathleen Doherty
Miss Mary Douglas
Miss Kathy DuBois
Miss Deborah Ellington
Mrs. Antonio Evangelista
Mr. Antonio Evangelista
Miss Judith Evans
Mrs. Edward I. Farley
Mr. Salvatore Fazio
Miss Jamie Feldstein
Miss Dolores Ferris
Mrs. Olive Fischer
Miss Adele Fox
Mrs. Robert Freiburger
Mrs. Harry Friedman

Mrs. Lawrence W. Gahagan
Mrs. William Gaxton
Mrs. Joseph Geffen
Mr. John Gibbon
Mrs. Rube Goldberg
Miss Amy Goldstein
Miss Nancy S. Goodman
Miss Mary Theresa Gorman
Miss Elaine Grubman
Mrs. Charles Haight
Miss Anita Halder
Miss Florence Halleran
Miss Marcia Halleran
Mrs. Ide K. Halpern
Mrs. Siegfried Hannah
Mrs. Lisa Harper
Miss Marguerite Henri
Miss Anna Marie Hickman
Miss Agnes Hickson
Miss Mary Beth Hufnagel
Mrs. John N. Insall
Miss Jessie Lee Johnson
Miss Helen D. Johnston
Miss Karen Kalmar
Miss Barbara Ann Kashah
Mrs. Theodore Kaufmann
Miss Mary Theresa Kearney
Miss Dorothy Keating
Miss Ann Kikas
Miss Antoinette L. Klein
Mrs. Juliane Koennecke
Miss Chris N. Kraves
Mrs. Dubie Kuba
Mr. Thomas Larsen
Miss Judith Lavery
Miss Jean Lees
Mrs. Frederick Liebolt
Miss Jean Lintelmann
Miss Peggy S. Levine
Mrs. Olegas Lomtevas
Mrs. Harold S. Lyon
Mrs. Richard McClenahan
Miss Sheila McRae
Mrs. Arthur Mack
Mrs. Ruth Manheim
Miss Emily Martinez
Miss Carrie Matton
Mrs. Albert Maurice
Miss Esta Michelson
Miss Dorothy Mihic
Mr. Michael Millstone
Miss Amy Milsted
Miss Diane Mitera

Miss Nancy Montgomery
Mrs. Jane Muccio
Miss Brenda Nechetsky
Mrs. Charles Newton
Mrs. Walter Niklaus
Mrs. Clarence D. O'Connor
Mr. Robert O'Leary
Mrs. Harold Palatsky
Mrs. David Patterson
Miss Barbara Pepper
Mrs. Phyllis B. Phillips
Mrs. Robert Powell
Mr. Alexander Priest
Miss Susan Rathgeb
Mr. Lawrence Reichwald
Mr. Michael Reininger
Miss Monica Risi
Miss Janis Rotkowitz
Mrs. Harriet Ruderman
Mrs. Mildred Russell
Mrs. Henry Sage, Jr.
Miss Marta L. Santiago
Miss Michele Sassoon
Miss Christine Saurel
Miss Louise Schneeweiss
Miss Eleanor Schnepf
Miss Ronnie Schuman
Miss Linda Theresa Senner
Mrs. Nathan Sheinman
Miss Cynthia Skiff
Mrs. Nate D. Shorr
Miss Susan Slavetsky
Mrs. Fred Stutz
Mr. Fred Stutz
Miss GERALYN Tierney
Miss Jacqueline Tisch
Miss Marcia Titus
Mrs. Carl A. Ulfers
Mrs. Sidney Voice
Miss Kathleen Ward
Mrs. Alfred Wiener
Mrs. Burr Wilson
Miss Nicole Wilson
Mrs. Philip D. Wilson, Jr.
Mrs. Paul Wolf

*Deceased

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Volunteer prepares to take cart load of candies, toiletries to patients.



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Young patients, in hospital for long stays, are treated to continuing program of excellent recreation and entertainment.

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Alumni Teaching Affiliations

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*Clinique Chirurgicale Orthédique et Réparatrice, Hospital Cochin, Paris, France

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*Lariboisiere Hospital, France

*University of Liege, Belgium

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University of Nebraska Medical School

New Jersey College of Medicine

New York Medical College

New York Polyclinic Medical School

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Temple University Medical School

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*Medical School in Thailand

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Patient being received by social service
 caseworkers for consultation.

1967-1968

COMPARATIVE STATISTICS

	1968	1967
Total Patient Days	62,098	61,505
Total Clinic Visits	35,174	37,253
Per Cent of Occupancy	83.4	84.6
Admissions	3,199	3,128
Discharged	3,178	3,266
Deaths	27	16
Autopsies	14	10
Laboratory Tests	125,177	118,685
X-Ray Films Made	89,780	86,911
X-Ray Examinations	36,844	35,301
Drug Prescriptions Filled	73,422	69,200
Operations	2,584	2,356
Average Length of Stay (Days)	20	20
Meals Served	186,294	186,335
Total Number of Volunteers	194	229
Hours Donated by Volunteers	22,106	22,102
Physical Medicine Treatments incl. Occupational Therapy	37,338	25,753
Total Number of Employees	778	746

Out-Patient Department

First Visits	3,905	4,549
Revisits	31,269	32,704
Total	35,174	37,253

Accountants' Opinion

To the Board of Managers

New York Society for the Relief of the Ruptured and
Crippled, Maintaining the Hospital for Special
Surgery and the Margaret M. Caspary Clinic
New York, New York 10017

We have examined the balance sheet of the New York Society for the Relief of the Ruptured and Crippled, Maintaining the Hospital for Special Surgery and the Margaret M. Caspary Clinic as of December 31, 1968, and the related statement of changes in fund balances and statement of income and expense for the year then ended. Our examination was made in conformity with generally accepted auditing standards and accordingly included such tests of the accounting records and such other auditing procedures as we considered necessary in the circumstances.

All securities owned by the Society at December 31, 1968, were held by the United States Trust Co. as custodian, and income from interest, dividends and rents for the year under review are stated as shown in the records of the custodian.

In our opinion, subject to the foregoing, the accompanying balance sheet, statement of changes in fund balances and statement of income and expense, together with footnotes, fairly present the financial position of the Society at December 31, 1968 and the results of its operations for the year then ended, in accordance with generally accepted accounting principles applied on a basis consistent with that of the preceding year.

New York, N. Y.
May 30, 1969

MacNICHOL, JOHNSON & CO.
Certified Public Accountants

Comparative Balance Sheet as at

	ASSETS		December 31, 1968	December 31, 1967
Operating Fund				
Cash in banks and office			\$ 3,456	\$ 170,975
Patients' accounts receivable	\$ 899,637			\$1,011,606
Less: reserves	136,065	763,572		156,778
Due from Blue Cross plans		201,312		116,468
Due from Medicare		—		84,881
Loans receivable		151,600		130,350
Miscellaneous accounts receivable		51,247		19,314
Inventory of materials and supplies		131,385		109,634
Prepaid insurance		35,343		51,298
Deferred expenses		65,711		60,339
Total		1,403,626		1,598,087
Investment Fund				
Cash in commercial and savings banks		208,117		37,209
Investments (market value Dec. 31, 1968—\$6,548,207)		4,142,865		3,561,852
Pledge receivable		20,000		—
Total		4,370,982		3,599,061
Permanent Funds				
Cash in commercial and savings banks		165,411		55,064
Investments (market value Dec. 31, 1968—\$2,897,482)		2,226,976		2,307,115
Total		2,392,387		2,362,179
Temporary Funds for Designated Purposes				
Cash in commercial and savings banks		417,570		396,117
Research grants receivable		490,586		437,600
Investments (market value Dec. 31, 1968—\$3,225,813)		2,816,311		2,473,566
Total		3,724,467		3,307,283
Plant Fund				
Hospital properties and equipment				
Cost	8,538,765		8,168,073	
Less: accumulated depreciation	2,714,462	5,824,303	2,282,762	5,885,311
Research building and equipment				
Cost	4,584,868		4,429,566	
Less: accumulated depreciation	1,176,151	3,408,717	903,866	3,525,680
Other real estate and equipment				
Cost	2,624,720		1,366,484	
Less: accumulated depreciation	247,807	2,376,913	155,525	1,210,959
Total		11,609,933		10,621,950
Construction in progress		140,482		15,079
Due from temporary funds for designated purposes		—		889,148
Total		11,750,415		11,526,177
TOTAL ASSETS		\$23,641,877		\$22,393,537

December 31, 1968 and December 31, 1967

	December 31, 1968	December 31, 1967
LIABILITIES, CAPITAL AND SURPLUS		
Operating Fund		
Accounts payable	\$ 294,556	\$ 373,822
Accrued salaries payable	32,250	83,289
Taxes payable	116,917	77,393
Sundry liabilities	169,285	61,077
Unexpended balances of special funds	70,597	59,735
Reserve for insurance premium adjustments	36,000	36,000
Advances from Associated Hospital Service of N.Y.—for Medicare	59,077	—
Total	<u>778,682</u>	<u>691,316</u>
Working capital	624,944	906,771
Total	<u>1,403,626</u>	<u>1,598,087</u>
Investment Fund		
Investment fund principal	4,290,227	3,599,061
Fund for Depreciation	80,755	—
Total	<u>4,370,982</u>	<u>3,599,061</u>
Permanent Funds		
Principal — unrestricted as to use of income	331,549	320,516
Principal — restricted as to use of income	1,991,538	1,968,842
Unexpended balance of restricted income	69,300	72,821
Total	<u>2,392,387</u>	<u>2,362,179</u>
Temporary Funds for Designated Purposes		
Accounts payable	109,897	51,469
Unappropriated principal	3,614,570	2,366,666
Due to plant fund	—	889,148
Total	<u>3,724,467</u>	<u>3,307,283</u>
Plant Fund		
Accounts payable	—	1,121
Mortgages payable	922,763	—
Loans payable	1	1
Plant capital	10,827,651	11,525,055
Total	<u>11,750,415</u>	<u>11,526,177</u>
TOTAL LIABILITIES, CAPITAL AND SURPLUS	<u>\$23,641,877</u>	<u>\$22,393,537</u>

Notes to the Balance Sheet

- Unpaid pledges at December 31, 1968 are not reflected in the financial statements.
- No final determination has been made with respect to retroactive rate adjustments which may be due from Associated Hospital Service of New York, for services to Medicare and Blue Cross patients, admitted during 1966, 1967 and 1968. Accruals have been made for services rendered to Blue Cross patients during 1967 and 1968 and these amounts are reflected in the foregoing statement. No accrual has been made for services to Medicare patients.
- The values shown for Fixed Assets in the Plant Fund at December 31, 1968 for buildings, fixed and major movable equipment and non-depreciable equipment and the related accumulated depreciation are based on a plant ledger which was prepared by the Industrial Appraisal Co. as at November 11, 1967. The values established were cast or, where this information was not available, an estimate of cost as of date of acquisition based on observed age and condition, was used. This plant ledger was revised by the hospital staff as of December 31, 1966 and updated to December 31, 1968. Hospital plant records were adjusted accordingly. Acquisition subsequent to December 31, 1966 were recorded at cost.
Depreciation on the adjusted undepreciated value of equipment as of December 31, 1967 was computed on a straight-line method based on the estimated remaining useful lives as determined by the appraisors. Depreciation on the adjusted undepreciated value of all buildings as of December 31, 1967 was computed on the sum of the year's digits method based on the estimated remaining useful lives.

Condensed Comparative Statement of Income and Expense

For the years ended December 31, 1968 and December 31, 1967

	Year Ended December 31,	
	1968	1967
Income from patients, less allowances	\$7,011,597	\$5,605,062
Less: Provision for uncollected accounts	60,000	60,000
Income from Patients after Deductions	<u>6,951,597</u>	<u>5,545,062</u>
Add: Other Hospital Operating Income		
Collection on accounts previously written off	11,316	1,215
Gift Shop receipts	17,305	—
Rent income	111,798	37,888
Cafeteria and Coffee Shop receipts	157,576	145,398
Professional fees	72,643	54,535
Overhead earned	96,000	96,160
Miscellaneous	78,060	66,675
Total Other Hospital Operating Income	<u>544,698</u>	<u>401,871</u>
Total Hospital Operating Income	<u>7,496,295</u>	<u>5,946,933</u>
Operating Expenses		
Salaries and wages	4,930,230	4,197,006
Supplies and expense	2,607,838	2,346,258
Depreciation of buildings and equipment	539,573	228,108
Total Operating Expenses (Note a)	<u>8,077,641</u>	<u>6,771,372</u>
Hospital Operating Loss	<u>581,346</u>	<u>824,439</u>
Less: Transfers from other funds	175,190	213,171
Excess of Hospital Operating Expenses over Hospital Operating Income (Charged to Working Capital)	<u>406,156</u>	<u>611,268</u>
Supplementary Income		
Interest and dividends (net)	190,322	170,395
Income from estates and trusts	71,131	87,826
Income from 77th Street property (net)	—	620
Income from 71st Street property (net)	7,173	—
Contributions:		
United Hospital Fund and Greater New York Fund	68,893	33,426
Other gifts and contributions	160,968	123,868
Women's Auxiliary	30,000	20,560
Total Supplementary Income	<u>528,487</u>	<u>436,695</u>
Less:		
Fund Raising and Public Relations Planning	39,126	36,053
Legal and professional services	14,207	22,385
Expenses on 72nd Street property (net)	55,023	51,150
Total Deductions from Supplementary Income	<u>108,356</u>	<u>109,588</u>
Supplementary Income (Net) (Credited to Investment Fund Principal)	<u>420,131</u>	<u>327,107</u>
Net Income (Loss) for Year	<u>\$ 13,975</u>	<u>(\$ 284,161)</u>

Note:

(a) Expenditures made during 1968 for research salaries and supplies amounting to \$1,056,157 were paid with special funds designated for such purposes and are not included in the above operating expenses.

Summary of Changes in Principal Balances of all Funds During the Year Ended December 31, 1968

	Total All Funds	Working Capital	Investment Fund Principal	Fund for Depreciation	Permanent Fund Principal and Restricted Income	Temporary Funds for Designated Purposes	Plant Capital
Balances—December 31, 1967	<u>\$20,759,732</u>	<u>\$ 906,771</u>	<u>\$3,599,061</u>	<u>\$ —</u>	<u>\$2,362,179</u>	<u>\$2,366,666</u>	<u>\$11,525,055</u>
Add:							
Transferred from other funds	5,041,327	539,748	1,331,175	260,000	—	1,182,636	1,727,768
Legacies, grants and gifts received ...	1,612,709	—	48,696	—	2,862	1,558,921	2,230
Net gain or (loss) from sale of investments	248,759	—	249,233	—	42,702	(43,166)	—
Non-operating income (net)	994,395	—	420,131	—	79,879	494,385	—
Retroactive rate adjustments	162,492	102,641	59,851	—	—	—	—
Adjustments of plant assets to reflect revised valuation of plant properties	173,025	—	—	—	—	—	173,025
Equipment purchases—Other Special Funds	7,730	—	—	—	—	—	7,730
Miscellaneous	5,553	5,553	—	—	—	—	—
Total Additions	<u>8,245,990</u>	<u>647,942</u>	<u>2,109,076</u>	<u>260,000</u>	<u>125,443</u>	<u>3,192,776</u>	<u>1,910,753</u>
Totals	<u>29,005,722</u>	<u>1,554,713</u>	<u>5,708,137</u>	<u>260,000</u>	<u>2,487,622</u>	<u>5,559,442</u>	<u>13,435,808</u>
Deduct:							
Transferred to:							
Working capital	539,748	—	175	—	—	—	539,573
Investment fund principal	1,331,175	353,389	—	—	—	—	977,786
Fund for depreciation	260,000	120,000	140,000	—	—	—	—
Temporary funds for designated purposes	1,182,636	50,224	5,652	—	35,962	—	1,090,798
Plant capital	1,727,768	—	1,272,083	179,245	—	276,440	—
Disbursements charged against principal or accumulated income ..	1,727,705	—	—	—	59,273	1,668,432	—
Hospital operating loss	406,156	406,156	—	—	—	—	—
Total Deductions	<u>7,175,188</u>	<u>929,769</u>	<u>1,417,910</u>	<u>179,245</u>	<u>95,235</u>	<u>1,944,872</u>	<u>2,608,157</u>
Balances—December 31, 1968	<u><u>\$21,830,534</u></u>	<u><u>\$ 624,944</u></u>	<u><u>\$4,290,227</u></u>	<u><u>\$ 80,755</u></u>	<u><u>\$2,392,387</u></u>	<u><u>\$3,614,570</u></u>	<u><u>\$10,827,651</u></u>

Department of Research

Details of Changes in the Research Fund During the Year Ended December 31, 1968

	Total All Funds	Research Funds	U.S. Public Health Grants	Other Grants
Balances Available at December 31, 1967	\$ (74,542)	\$ (608,486)	\$458,149	\$ 75,795
Additions:				
Income earned and appropriated (including revenues) . .	443,467	443,467	—	—
New gifts and grants received	932,428	17,250	741,550	173,628
Transfers from other funds	1,096,450	1,096,450	—	—
Total Additions	<u>2,472,345</u>	<u>1,557,167</u>	<u>741,550</u>	<u>173,628</u>
Deductions:				
Salaries	675,845	204,411	429,823	41,611
Expenses and commitments	380,312	124,644	187,190	68,478
Overhead	201,753	96,000	105,953	—
Equipment	113,128	3,654	105,891	3,583
Deductions before Depreciation	<u>1,371,238</u>	<u>428,709</u>	<u>828,857</u>	<u>113,672</u>
Depreciation on building and equipment	201,650	201,650	—	—
Total Deductions	<u>1,572,888</u>	<u>630,359</u>	<u>828,857</u>	<u>113,672</u>
Balances Available at December 31, 1968	<u>\$ 824,915</u>	<u>\$ 318,322</u>	<u>\$370,842</u>	<u>\$135,751</u>

(A) Includes \$190,389 received by the hospital in 1968 as an income beneficiary in perpetuity of the Trust under the will of Helen G. Bicknell.

Philip D. Wilson Research Foundation

Comparative Balance Sheet as at December 31, 1968 and December 31, 1967

ASSETS	December 31, 1968	December 31, 1967
Cash:		
United States Trust Company	\$ 24,046	\$ 15,304
Investments (market value Dec. 31, 1968—\$131,000)	131,000	129,675
Loan receivable	1	1
TOTAL ASSETS	<u>155,047</u>	<u>144,980</u>
PRINCIPAL		
Beginning balance	144,980	452,581
Reduction of loan receivable to a nominal value	—	319,350
	<u>144,980</u>	<u>133,231</u>
Gifts and donations received	990	4,815
Income from investments	9,579	6,958
Net gain or (loss) from sale of investments	366	117
Sundry expenses	(868)	(151)
PRINCIPAL BALANCE	<u>\$155,047</u>	<u>\$144,980</u>



Out Patient Registrar checks patients' medical charts.

Hydrotherapy Aide lowers patient into pool where therapist will give comforting and beneficial treatment.



Interview in Social Service dept. provides for better understanding of patients' needs and assumes best continuing care.

One of many patient-oriented services of volunteers is distribution of free coffee to patients waiting for appointments.



The generation gap — but with a common goal to walk.



1864-1968 OFFICERS OF THE SOCIETY

PRESIDENTS

(Dates Inclusive)

Green, John C.	1864-1874
Brown, Stewart	1875-1879
Willets, Samuel	1880-1883
Macy, William H.	1883-1887
Osborn, William H.	1887-1890
Isham, William B.	1891-1901
Sturges, Frederick	1901-1910
Osborn, William Church	1910-1925
Melcher, John S.	1926-1928
Osborn, William Church— Acting President	1928-1930
Osborn, William Church	1931-1937
Osborn, William Church— President Emeritus	1938-1951
Rossiter, Arthur W.	1938-1948
Duryee, Samuel S.	1958-
Bastedo, Philip	1958-

CHAIRMAN OF THE EXECUTIVE COMMITTEE

Miller, Lawrence McK.	1956-
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VICE-PRESIDENTS

(Dates Inclusive)

Minturn, Robert B.	1864-1865
Brown, Stewart	1864-1874
Lenox, James	1864-1879
Wetmore, A. R.	1864-1880
Wolfe, John David	1864-1872
Griswold, George	1866-1875
Willets, Samuel	1873-1879
Corning, H. K.	1875-1877
Macy, William H.	1876-1882
Terbell, Henry	1878-1887
Hoe, Robert	1880-1883
Colgate, Robert	1880-1884
Osborn, William H.	1881-1886
Potter, Orlando	1883-1893
Iselin, Adrian	1884-1904
Isham, William B.	1885-1890
.....	1905-1908
Agnew, Alexander L.	1887-1890
Webb, William H.	1888-1894
Kingland, William M.	1892-1904
Thorne, Samuel	1892-1905
Kennedy John S.	1894-1908
Bliss, George	1895
Willets, John T.	1897-1911
Stearns, John Noble	1906
Wing, John D.	1905-1909
Macy, William H., Jr.	1908-1912
Sloane, William	1912-1916
Iselin, Ernest	1931-1951
Brown, Vernon Carleton	1935-1944
Wing, Morgan	1937-1948
Thieriot, Charles H.	1940

Wilmerding, Lucius	1941-1949
Duryee, Samuel S.	1945-1948
Wing, Morgan, Jr.	1948-1952
Miller, Lawrence McK.	1949-1956
Finch, Henry L.	1949-1956
Symington, Charles J.	1951-1955
Pillot, Andre P.	1952-1958
Fletcher, Mrs. Walter D.	1955-1965
Reynolds, Mrs. John H.	1956-
Noel, Louis W.	1956-1966
Hilson, Mrs. Edwin I.	1957-
Stevenson, T. Kennedy	1958-1963
Rawle, Marshall	1964-

ADMINISTRATIVE VICE PRESIDENT

Young, T. Gordon	1966-
-----------------------	-------

TREASURERS

(Dates Inclusive)

Sturges, Jonathan	1864-1874
Sturges, Frederick	1875-1906
Melcher, John S.	1907-1925
Shearer, George L.	1926-1946
Stewart, Wm. A. W.	1946-1955
Stewart, E. Sheldon	1955-1965
Dyson, Charles H.	1965-

ASSISTANT TREASURERS

Hoguet, Robert L., Jr.	1956-1963
Dyson, Charles H.	1964-1965
Harris, Henry U.	1965-
O'Neill, James D.	1966-

CORRESPONDING SECRETARIES AND RECORDING SECRETARIES

Hartley, Robert M.	1864-1875
Collins, Joseph B.	1864-1867
Swan, Otis D.	1868-1876
Warburton, A. F.	1876-1878
Abbe, George W.	1877-1879
Stewart, W. A. W.	1879-1887
Townsend, John P.	1886-1897
Stetson, Francis Lynde	1888-1889
Sturges, William C.	1890-1896
Jennings, Walter	1899
Osborn, William Church	1900-1909
Stearns, John Noble	1924-1930
Eyre, Edgar Ainsworth	1924-1935
Miller, Lawrence McK.	1931-1949
Finch, Henry L.	1936-1949
Townsend, Reginald T.	1949-1956
Melcher, John	1949-1956
Hilson, Mrs. Edwin I.	1957-1958
Rawle, Marshall	1957-1964
Osborn, William H., Jr.	1958-

1864-1969 BOARD OF MANAGERS

(Dates Inclusive)

Abbe, George W.	1864-1879
Agnew, Alexander McL.	1876-1890
Amory, Mrs. Harcourt, Jr.	1966-
Bastedo, Philip	1955-
Beekman, James W.	1864-1865
.....	1868-1870
Billings, Frederick	1888-1899
Bishop, David Wolfe	1882-1899
Bishop, Nathan	1864-1867
Bliss, George	1887-1895
Bliss, Walter	1911-1922
Bonner, Robert	1879-1881
Booth, William A.	1864-1865
Bradford, William H.	1878-1895
Brock, Mrs. Horace	1966-
Brown, Stewart	1864-1879
Brown, Vernon C.	1931-1944
Cabot, F. Higginson	1926-1928
Caswell, John	1866-1867
Chapin, L. H. Paul	1931-1935
Church, John A.	1940-1941
Clark, C. C.	1888-1899
Clark, George C., Jr.	1906-1909
Colgage, Charles	1872-1877
Colgate, R. R.	1908-1921
Colgate, Robert	1869-1884
Collins, Joseph B.	1864-1867
Cooper, Peter	1866-1870
Corning, H. K.	1866-1877
Dammond, Mrs. Donald G.	1969-
Davison, F. Trubee	1923-1924
Davison, H. P.	1912-1921
Denny, Thomas	1864-1875
DePew, Chauncey M.	1897-1901
Draper, William H.	1897-1900
Drexel, Mrs. John R., III	1959-1961
Duryee, Samuel S.	1940-1961
Dyson, Charles H.	1959-
Eliot, Howard	1920-1928
Fancher, Enoch L.	1864-1865
Finch, Henry L.	1920-1960
Fiske, Josiah M.	1879-1881
Fletcher, Walter D.	1941
Fletcher, Mrs. Walter D.	1950-1965
Fried, Mrs. Walter J.	1962-
Furland, Richard M.	1968-
Gibson, W. Frazer	1931-1937
Gilman, William C.	1864-1871
Eyre, Edgar Ainsworth	1923-1935
.....	1945-1955
Gillespie, S. Hazard	1955-1959
.....	1961-
Golding, Jerrold R.	1953-1967
Green, John C.	1864-1874
Griswold, George	1864-1875

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*Deceased

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Milton A. Wald, M.D.

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Robert Winchester, M.D.

Physician adjusts brace on scoliosis patient.

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ATTENDING CARDIOLOGIST

Irwin Nydick, M.D.

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Dr. Robert L. Wilson

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A bed may be endowed by an unrestricted gift to the Society of not less than \$7,500 made for that purpose, and the donor during his life, or, if the gift is made by will, the person named in the will for a period not to exceed twenty years, shall have the right to designate an occupant of such bed. When the gift amounts to \$10,000 or more, the Society will furnish to the designated occupant of such bed without charge in any one calendar year care and services, the cost of which, computed at the Society's then scale of rates, equals the income earned by the Society on the amount of such gift, computed upon the basis of the average rate of return on the Society's general funds during the preceding calendar year. The Society will list all endowed beds in its annual report and record the same on appropriate plaques in the Hospital.

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The Society has always been greatly aided by this form of generosity. No precise words are necessary to a valid legacy to the corporation. The following form, however, may be suggested.

"I give to New York Society for the Relief of the Ruptured and Crippled, located at 535 East 70th Street, New York City, the sum of

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All staff members holding staff appointments in either New York Hospital-Cornell University Medical College, or The Hospital for Special Surgery-Philip D. Wilson Research Foundation, shall be considered staff members of the other hospital.

Photography by Bradford Bachrach, W. Eugene Smith, Carole Thomas

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